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INTERACTIVE CONTROLS OF WATER TABLE POSITION AND PLANT FUNCTIONAL TYPES ON PEAT POREWATER CHARACTER IN NORTHERN BOG ECOSYSTEMS: IMPLICATIONS FOR CARBON CYCLING DYNAMICS

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By

Aleta L. Daniels

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Preface

This thesis is submitted for the degree of Master of Science at Michigan Technological University. The research described herein was conducted under the supervision of Dr. Evan S. Kane through the Department of Forest Resources and Environmental Science and the U.S Forest Service Northern Research Station with additional supervision and assistance by Dr. Randy Kolka with the U.S Forest Service. This is original work written by the lead author, with the exception of the oxidation reduction potential analysis which was conducted by Tim Veverica. This thesis is in preparation for submission into ecological journals.

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Abstract[1]

Northern wetlands, and particularly peatlands, have been shown to store around 30% of the world's soil carbon and thus play a significant role in the carbon cycle of our planet. Changes in climate are altering peatland hydrology and vegetation communities. These changes are possibly resulting in declines in the ability of peatlands to sequester carbon because losses through carbon oxidation and mineralization are likely to increase relative to C inputs from net primary production in a warmer, drier climate. However, the consequences of interactive effects of altered hydrology and vegetation on carbon storage are not well understood. This research evaluated the importance of plant species, water table, and their interactive effects on porewater quality in a northern peatland with an average pH of 4.54, ranging from 4.15 to 4.8. We assessed the effects of plant functional group (ericaceous shrubs, sedges, and bryophytes) and water table position on biogeochemical processes. Specifically, we measured dissolved organic carbon (DOC), total dissolved nitrogen (TDN), potential enzyme activity, organic acids, anions and cations, spectral indexes of aromaticity, and phenolic content. Our results indicate that acetate and propionate concentrations in the sedge-dominated communities declined with depth and water table drawdown, relative to the control and ericaceous treatments. DOC increased in the lowered water table treatments in all vegetation community types, and the peat porewater C:N ratio declined in the sedge-dominated treatments when the water table was lowered. The relationship between DOC and ferrous iron showed significant responses to vegetation type; the exclusion of *Ericaceae* resulted in less ferrous iron per unit DOC compared to mixed species treatments and *Ericaceae* alone. This observation was corroborated with higher mean oxidation redox potential profiles (integrating 20, 40, and 70 cm) measured in the sedge treatments, compared with the mixed and *Ericaceae* species treatments over a growing

[1]The material contained in this thesis is planned for submission in the near future to the Journal of Geophysical Research by A. Daniels, E.S. Kane, and R. Kolka.

season. Enzymatic activities did not show as strong of a response to treatments as expected;

the oxidative enzyme peroxidase and the hydrolytic enzyme phosphatase were the only enzymes to respond to water table, where the potential activity of both enzymes increased with water table drawdown. Overall, there were significant interactive effects between changes in vegetation and water table position on peat porewater composition. These data suggest that vegetation effects on oxidation reduction potentials and peat porewater character can be as important as water table position in northern bog ecosystems.

1. Introduction

Although composing only 3% of the earth's land mass, peatlands play a large roles in sequestering carbon from the atmosphere. Northern peatlands store carbon due largely to their anaerobic layers and slow decomposition rate, which are influenced primarily by inundation and the lack of lateral inputs of nutrients or dissolved oxygen (Crum 1988; Williams 2000, Freeman 2001). Therefore, the ability of peatlands to store carbon is tightly linked with hydrology. Lowered water tables caused by climate change or anthropogenic drainage can shift peatlands from being net carbon sinks to net carbon sources (Bridgham et al. 2006; Trettin et al. 2006; Dinsmore et al. 2010). Current trends and climate models predict climate change will result in a general pattern of decreased water availability in the growing season (Thomson et al. 2005). Precipitation patterns are also becoming more variable with an increase in the occurrences of extreme rain events and summer drought (Easterling et al. 2000; Kunkel et al. 2003; Groisman et al. 2005). In turn, these changes in climate can lead to increased amplitude of water table variation, including substantial mid-summer declines in water table height (Roulet et al. 1992; Hillbert et al. 2000). The net effects of decreased water availability in peatlands could directly affect changes in peatland carbon balances and alter plant community composition (Weltzin et al. 2000; Chivers et al. 2009; Zona et al. 2009).

Plant communities in peatlands can be influenced by climate change, and shifts in the relative abundance of plant functional groups that can create feedbacks to carbon cycling and trace gas flux (Bridgham et al. 1995; White et al. 2008). In addition to *Sphagnum* mosses, Northern bog peatlands are dominated by two other plant functional types- ericaceous shrubs and sedges. These vegetation functional types have developed distinct survival strategies for existence in peatlands, and are strong drivers of peatland biogeochemistry (ref). Sedges are able to root deep into the peat profile due to the presence of aerenchyma tissue. This allows oxygen to disperse into the roots and significantly alters oxidation reduction potential, particularly at depth in the peat profile. In contrast, *Ericaceae* shrubs are shallow-rooted and their unique ability to obtain nutrients is through the symbioses with ericoid mycorrhizal fungi (ERC). The ERC can break down more recalcitrant materials such as polyphenols (tannin and lignin), which are low molecular weight compounds that inhibit most microbial and enzymic degradation (Bending and Read 1997). Polyphenols are part of a large class of plant secondary metabolites and are a significant part of the dissolved organic carbon (DOC) pool in bogs. In peatlands, they are found primarily in ericoid litter and have been shown to inhibit digestive extracellular enzyme activity, potentially inhibit nitrification, and are slow to degrade (Kirk and Farrell 1987; Hattenschwiler 2000; Burke and Cairney 2002; Joanisse et al. 2007). ERC have been found to be capable of breaking down phenolic compounds due to their abilities to detoxify these compounds, allowing extracellular enzymes to have access to previously unavailable nutrients (Bending and Read 1997).

Like vegetation, depth to water table also strongly influences peatland dynamics. Because peatlands are typically consistently saturated anaerobic systems below the acrotelm, increasing the oxygen content through water table drawdown can alter the carbon cycling in peatlands (Blodau and Moore 2002), microbial communities (Megonigal and Hines 2004), and the types of electron acceptors available for microorganisms, such as ferric iron (Lovely et al. 1996). Water table has a strong effect on DOC production and consumption in peatlands (Reddy and DeLaune 2004; Fenner et al. 2009; Moore 2009). Under anoxic conditions, DOC production is promoted due to fermentative metabolites, such as acetate, formate, and propionate (Ponnamperuma 1972). Water table fluctuations have been linked to greater peat decomposition, which has been shown to increase DOC concentrations, and possibly increase the proportion of DOC composed of aromatic compounds (Kalbitz et al. 2003; Holl et al. 2009). Other studies on water table position influences on DOC have suggested that DOC production, consumption, and export are controlled by other factors than water table alone, such as changes in discharge (Pastor et al. 2003), chemical factors (Blodau and Moore 2003), and enzyme activity (Freeman et al. 2004).

Vegetation communities are also affected by the water table. For instance, Breeuwer et al. (2009) found that sedge species thrive when water table is consistently high, while *Ericaceae* perform optimally when water table fluctuates. Weltzin et al. (2000) assessed water table impacts on bog vegetation communities and found that consistently high water table levels were not supportive of shrub species and similar water table levels in a fen resulted in increased sedge production. It has also been argued that the direct effects of water table drawdown are overruled by the indirect effects drawdown produces through changes in litter type composition (Strakova et al. 2012).

Water table also affects microbial enzyme production and activity. Freeman et al. (2007) investigated the response of soil enzymes in a wetland to a simulated drought. They found that β-glucosidase responded inversely with DOC concentration and positively with methane production. Lower water tables will also likely increase the amount of phenol oxidase present, which may decrease the phenolic levels (Freeman et al. 2001). In contrast, Toberman et al. (2010) showed that while long-term drainage inhibits phenol oxidase activity, the activity of phenol oxidase appeared to be more affected by soil acidity than increased aeration.

Extracellular enzymes (EE), entering the soil generally through methods such as excretion or cell lysis, play an important role in the peatlands as their activities help combat poor nutrient quality by catalyzing the breakdown of recalcitrant materials. Through this, the EE allow nutrients to become available within the soil profiles and assist in the transformation and mineralization of soil organic matter, and are also involved in increasing DOC concentrations. Schimel and Winetraub (2002) conducted research on decomposition rates, microbial growth, and enzymatic activity in soil and determined that an increase in the amount of labile carbon to a DOC pool will increase extracellular enzyme production as well as increase microbial respiration and growth.

The increased enzyme production has a stimulatory effect on decomposition rates as well. As introduced by Sinsabaugh (2010), oxidative enzymes (e.g., phenol oxidase and peroxidase) are one group of important extracellular enzymes found in peat systems, named because of their use of oxygen to oxidize phenolic compounds. A second category of extracellular enzymes, hydrolytic enzymes, utilize water to break down substrates. The production of DOC can be inhibited by the repression of major biodegrading hydrolytic enzymes. Common hydrolytic enzymes are cellobiohydrolase, β-glucosidase, N-acetyl-glucosaminidase (NAGase), and phosphatase. Cellobiohydrolase and β-glucosidases, which are known for their capability in breaking down cellulose and the hydrolysis and biodegradation of various glucosides present in decomposing plant debris. One of their products is glucose, an important source of energy for plant cells. NAGase plays a part in the degradation of chitin in plant litter and assisting N-acquiring organisms. Phosphatase is critical in the mineralization of phosphorus. It removes a phosphate group from its substrate through hydrolysis, and its activity is suppressed by its product, phosphate.

As the climate changes, the role of peatlands is also changing and it is important to study how and why these ecosystems could change in the future. The production and consumption of DOC is likely to play a significant role in carbon cycling. In carbon rich ecosystems such as northern peatlands, fluxes of DOC can be similar in magnitude to that of long-term C accrual in dead organic matter (Rapalee et al. 1998; Moore 2003); therefore it is important to understand the direct mechanisms driving the changes in DOC concentrations. In light of changing climate, it is important to further our understanding as to what factors may be more influential on the functions of these ecosystems and how these factors interact to drive peatland responses.

2. Objectives and Hypotheses

The influences of vegetation and water table on C cycling in peatlands have been studied extensively on their own (Weltzin et al. 2000; Blodau and Moore 2002; Chivers et al. 2009; Zona et al. 2009). The overarching objective of this research was to determine the effects of peatland plant functional groups, water table levels, and their interacting effects on peatland carbon cycling and dynamics. In particular, we investigated changes in peat porewater chemistry and character as affected by changes in plant communities, their enzymatic functions, and changes in peat decomposition. In addressing our goals, we utilized a peat mesocosm facility (PEATcosm) that employed tight controls over vegetation composition and water table position (Potvin, unpublished data). We hypothesized that *a lowered water table will increase both the quantity and lability of DOC concentrations as the influx of oxygen into previously anoxic conditions allows increased mineralization.* We also hypothesized that *in sedge-dominated communities,* *their deep roots and aerenchyma cells will increase oxygen availability deeper in the peat profile, increasing DOC mineralization. We hypothesize there will be interactive effects of plant functional type and water table, with enhanced DOC degradation occurring with water table drawdown when sedges are present.* Because *Ericaceae*-dominated communities are characterized by shallow roots and mycorrhizal fungi and a lack of extracellular enzymatic activity, *we hypothesize that this will result in higher levels of polyphenols and aromatic carbon associated with Ericaceae, resulting in decreased DOC degradation, increasing DOC concentrations.* Because enzyme activity is influenced by water table and vegetation types, we hypothesized that *as conditions become more aerobic with a lowered water table, phenol oxidase activity will increase, which may catalyze a more complete breakdown of the recalcitrant compounds found in ericaceous litter. However, while increased phenol oxidase levels may have a significant impact on the breakdown of recalcitrant materials, we expect to find that increased levels of aromatic carbon compounds outweighs the impact of a lowered or more variable water table, causing little or no increase in breakdown of dissolved organic matter; in this case we would see sedge-dominated communities exhibiting more labile DOC compounds in peat porewater.*

3. Methods and Materials

3. 1 *Study site and Design*

To understand the interactions of water tables and plant communities in nutrient poor peatlands we utilized the Houghton Mesocosm facility (PEATcosm Experiment). This facility allows for control over both plant functional group presence and water tables using peat mesocosms that are otherwise similar. We have established a 3 plant functional group x 2 water table factorial experiment, with 4 replicates, in a completely random design (24 mesocosms total). We have established three bog communities (control, minus sedges, and minus *Ericaceae*) and two water table treatments (low intraseasonal variability, higher mean water table; high intra-seasonal variability, lower mean water table).

The source site for the bog material was northern Minnesota, near Meadowlands. A homogenous open bog area was surveyed and 24 locations were established that exhibited similar vegetation composition (equal presence of *Ericaceae*, sedge abundance, and moss cover) and microtopography (hummock and hollow areas were not included). These $1m^3$ locations were harvested intact and transported to Houghton, MI, USA in 2010. The facility has been described in detail by Potvin et al. 2013, but briefly it consists of 24 mesocosm bins constructed of Teflon coated stainless steel, with one face consisting of pressure-treated glass. The vegetation treatments consisted of eight bins that had *Ericaceae* removed to leave only sedges, eight bins in which sedges removed to leave only *Ericaceae*, and eight bins that were unmanipulated leaving both sedges and *Ericaceae* as control. Vegetation communities, initiated in May 2011 by removal of all active vegetation growth, were maintained throughout the growing season. Sedges were removed by trimming the plants to beneath the root collar as far as possible down the main rhizomes with minimal impact to the peat and any re-growth was clipped close below the peat surface. *Ericaceae* were removed by clipping the stems just below the peat surface. Plant removals occurred until all members of the target group were removed. The water table treatments consisted of a high water table (10-15 cm below the peat surface) and low water table (15-30 cm below the peat surface) and were initiated in the start of the growing season (Figure 1). Clear plexiglass rain-exclusion shelters were applied to the low water table treatments during rain events to create the low-water table scenarios. Water drainage from the acrotelm - catotelm boundary was also made possible with an outlet present on the side of each bin. This outlet was guarded with a column of quartz wool, and regulated with a proportional control valve solenoid. The water table drawdown drought scenario prescriptions dictated the volume of water allowed to drain from the lowered treatments, and determined when rain-exclusion shelters were deployed. The water table prescriptions were based on long-term data from Marcell Experimental Forest (MEF) in north-central Minnesota, with the two target water table seasonal profiles based on typical low variability, high minimum water table years (high water table treatment, as observed at MEF in 2005) derived from the 50 year record of precipitation and water tables. This variation is driven both by intra-annual variability in timing and interannual variability in amount of inputs. Thus, we used the average precipitation profiles of the high water and low water years to manipulate water tables. Water table levels were monitored daily via pressure transducers (Grainger 2HMC7) and continuously logged with a National Instruments system (NI) LabVIEW Software. Inputs were regulated by a combination of additions solution chemically equivalent to rainwater (National Atmospheric Deposition Program station MI99) and rain-out shelters were employed when needed. Temperature was monitored by two 80cm long temperature probes in each mesocosm with five thermistors each, allowing us to monitor vertical and horizontal temperature gradients.

3.2 *Sample Collection*

Porewater samples were harvested using a syringe from depths of 20, 40, and 70 cm biweekly during the growing season (May-September, 2012) using piezometers constructed out of ultra-high-density polyethylene (UHDPE) and covered with Nitex nylon mesh (37 micron). Each depth was centered to a 10cm slotted region. A Teflon tube (0.64 cm) was centered at each depth, and each depth was isolated in the tube with plugs of inert glue. Teflon tubes were sealed at the surface with three-way stopcocks. Porewater samples were harvested without introducing atmosphere by purging the lines and any headspace prior to sampling with a syringe. Samples of 60 ml were collected in pre-rinsed collection bottles and were immediately filtered into a second acid-washed 60 ml brown Nalgene bottle using 45μm nylon membrane filters and refrigerated immediately following filtration; these samples were used for spectrophotometric methods. 20 ml splits were acidified with hydrochloric acid to be analyzed for DOC and total dissolved nitrogen (TDN) and 20 ml splits were separated for ion chromatography.

3.3 *Chemical constituent analysis*

Dissolved organic carbon and total dissolved nitrogen (TDN) were measured using a Shimadzu TOC-V Combustion Analyzer (Shimadzu Scientific Instruments, Columbia, MD, USA). Dissolved organic nitrogen was determined by finding the difference between TDN and inorganic nitrogen (the sum of ammonium, nitrate, and nitrite).

Porewater ultraviolet absorbance (UVA) was measured at wavelengths 254, 365, 465, and 665 using a SpectraMax M2 multimode microplate reader (Molecular Devices Corporation, Sunnyvale, CA, USA) to aid in the determination of DOC character. Specific ultraviolet absorbance at 254nm ($SUVA_{254}$) was calculated as the absorption spectra at 254nm divided by [DOC]. To account for the change in path length associated with the microplate reader method compared to UVA measured on a standard 1cm quartz cell, we employed an empirical relationship derived from a subset of samples also analyzed with a 1cm quartz cell (n=24, R^2=0.98) this allowed for our $SUVA_{254}$ to be expressed as L mg^{-1} C^{-1} (cf. Wieshaar et al. 2003). The ratio of absorption spectra at λ254:λ365 and λ365:λ465 were used as indexes of aromaticity of the dissolved organic carbon, and λ465:λ665 was used as an indicator of DOC humification (cf. Worrall et al., 2002).

Total phenolics (tannin and lignin), ammonium, and total and ferric iron were analyzed using Hach (Loveland, CO, USA) reagents scaled to a microplate technique. The Hach tannin and lignin method, which determines all hydroxylated aromatic compounds, tested for total phenolics present in the porewater samples. Total phenolics were quantified at a 1:3 dilution by adding 83 µl of sample followed by 166 µl of RO water to each microplate well to which 10 µl of TanniVer reagent was added. Next we dissolved sodium pyrophosphate (NaP_2O_7) in RO water (0.3 g per 3 mL), 20 µl of which was added to each well to eliminate the possibility of possible ferrous iron interference. This was followed by 50 µl of sodium carbonate solution. The plate was shaken for 30 seconds to allow all products to mix, incubated for 25 min, and read at an absorbance of 700 nm. A total phenolic standard curve was produced from tannic acid diluted to 1.5, 3, 6, and 9 ppm. Ammonium was determined using methods outlined by Sinsabaugh et al. 2000. A standard curve was produced from ammonium acetate diluted to 0.25, 0.5, 1, 2.5, and 5 ppm. The Hach total and ferrous iron methods found the total dissolved iron present in porewater samples. Total iron was quantified at a 1:10 dilution by adding 21 µl of sample to 189 µl of RO water to each microplate. A sample blank was used for each sample for analysis. 40 µl of FerroVer reagent was added to each well, after which the plate was shaken for 30 seconds and then allowed to sit for 3 minutes, after which the plate was read at an absorbance of 510 nm. A standard curve was produced from 50 ppm stock diluted to 5, 2.5, 1, 0.5, and 0.25 ppm. Ferrous iron was quantified in the same manner except 40 µl of Ferrous Iron reagent was used in place of FerroVer. A standard curve was produced by diluting 1 ppm stock to 0.5, 0.25, and 0.1 ppm.

Four organic acids (acetate, propionate, formate, and oxalate) and seven anions (fluoride, chloride, nitrate, bromide, nitrite, sulfate and phosphate) were analyzed using an ICS-2000 Ion Chromatograph (Dionex Corporation, Bannockburn, IL, USA). Detection limits for ion chromatography and spectrophotometry were 0.02 mg L^{-1}.

Microplate fluorimetric and colorimetric assays were performed to assess potential activity levels of enzymes in the dissolved phase in relation to each other and the applied treatments. We examined four hydrolase enzymes (cellobiohydrolase, β-glucosidase, n-acetyl-glucosidase, and phosphatase) and two oxygenase enzymes (phenol oxidase and peroxidase). Methods were adapted from Sinsabaugh et al. (2003) and optimized for use in peat soil.

3.4 *Statistical analysis*

A two-way, repeated measures analysis of variance was conducted using PROC GLIMMIX in SAS to test for water table and vegetation effects on the porewater character. Distribution was changed based on the univariate plots for the response variables; DOC and tannins had normal distributions, for all other variables we used gamma, lognormal, or poisson. Water table levels and vegetation treatments were treated as fixed effects and Julian Day was treated as repeated measures. Comparison of average means between all treatments were conducted using Tukey's Post-Hoc analysis with differences at $p<0.05$ considered significant.

4. Results

4.1 *Water table and vegetation effects on DOC and TDN*

There was not a significant water table effect on mean seasonal DOC concentrations across all depths, however TDN did respond to water table ($F_{1,68.05}=3.39$, $p=0.07$) with highest concentrations in the treatments with lowered water table (2.89 ±0.06) than the high water table (2.58 ±0.04). DOC and TDN concentrations changed seasonally with the lowest concentrations occurring in early summer (June), and increasing in August and September.

DOC changed across vegetation treatments (Table 1, $F_{2,64.99}=3.26$, $p=0.04$ and $F_{2,68.09}=3.18$, $p=0.05$, respectively). Higher concentrations of DOC across all depths were reported in the treatments with only *Ericaceae* (89.24±1.14) while the control treatments had the lowest concentrations (80.07±0.92) and sedge-only treatments fell in between (85.33±1.43).

Vegetation treatment effects were also found to be significant for TDN ($F_{2,68.09}$=3.18, p=0.05). Concentrations were found to be highest in treatments with only sedges (2.90±0.08), followed by ericoid-only (2.77±0.05) and then control treatments (2.54±0.04), this trend being consistent at the 20 and 40cm depths. At 70cm, treatments with only *Ericaceae* had the highest concentrations (3.11±0.08 for *Ericaceae* and 2.96±0.15 for sedge-dominated treatments).

There were significant interactive effects in the relationship between DOC and TDN as a function of water table and vegetation (three way interaction, $F_{2,147}$= 6.50, P= 0.002) in analysis of covariance. Depth exhibited an interaction between dominant vegetation type and water table position in explaining DOC and TDN. At the 20cm depth, DOC was strongly affected by the interactive effect between water table position and vegetation (**Figure 2c**). These effects disappeared deeper down in the peat profile.

4.2 *Water table and vegetation effects on DOC quality*

Porewater aromaticity, represented here by $SUVA_{254}$, was higher in the higher water table treatment (4.32 ±0.04) than in the low water table treatment (4.14 ±0.04) on average across all depths ($F_{1,80.64}$=6.66, p=0.01). When water table was low, aromaticity increased when sedges were present and *Ericaceae* were not present. $SUVA_{254}$ concentrations were also influenced by depth ($F_{2,84.29}$=4.61, p=0.01) and also presented a significant response to the interactive effects of water table and vegetation (**Figure 2a**). UVA_{254}:UVA_{365} did not show any direct water table, vegetation or depth effects. However UVA_{365}:UVA_{465} exhibited both a water table effect ($F_{1,66.27}$=4.04, p=0.05) and a depth effect ($F_{2,67.89}$=13.93, p=<0.0001); UVA_{365}:UVA_{465} was higher in the drained treatments and increased with depth. UVA_{465}:UVA_{665} responded to water table ($F_{1,115.1}$=9.11, p=0.003), depth ($F_{2,125.8}$=21.35, p=<0.0001), and interactions between vegetation and water table ($F_{2,115.1}$=2.13, p=0.12). Neither UV_{365}:UV_{465}, UV_{254}:UV_{365}, or UV_{465}:UV_{665} showed responses to vegetation treatments.

Total phenolics did not show a water table effect, but did respond marginally to vegetation treatments ($F_{2,94}$=2.40, p=0.09); sedge-only treatments had the highest concentrations (15.63 ±0.43) followed by *Ericaceae*-only treatments and the control treatments (15.55 ±0.40 and 14.49 ±0.30 respectively). The concentration of total phenolics did not exhibit a response to water table and vegetation interactions ($F_{2,91.44}$=0.24, p=0.79), but they did show a marginal response to vegetation treatments ($F_{2,94}$=2.40, p=0.09); sedge-only treatments had the highest concentrations (15.63 ±0.43) followed by *Ericaceae*-only treatments and the control treatments (15.55 ±0.40 and 14.49 ±0.30 respectively).

4.3 *Water table and vegetation effects on porewater chemical constituents*

Many of the cations and anions analyzed were significantly influenced by water table treatment and vegetation treatments. Ammonium exhibited significantly higher concentrations in the lowered water table ($F_{1,97.22}$=9.81, p=0.002) with concentrations increasing with depth ($F_{2,334.3}$=13.26, p=<0.0001) and exhibited highest concentrations in the sedge-only treatments (0.70 ±0.07), with no difference between ericoid-only and control treatments (0.50 ±0.04 in both treatments) ($F_{2,336.5}$=3.69, p=0.02). Ammonium also responded strongly to water table and vegetation interactions ($F_{2,336.5}$=4.32, p=0.01); under high water table conditions, the highest concentrations were found in treatments that had only *Ericaceae* (0.51 ±0.05). Sulfate did not respond to vegetation treatments. However, sulfate did exhibit a significant response to water table ($F_{1,69.67}$=15.00, p=0.0002) where concentrations were higher in the lower water table treatments (0.17 ±0.01) than in the higher water table treatments (0.12 ±0.01). Phosphate did not respond to either water table or vegetation treatments individually, however we did see a response to water table and vegetation interaction ($F_{2,18.91}$=2.81, p=0.08); when water table was lowered, concentrations of phosphate increased when ericoids were removed and sedges were dominant.

Organic acids (acetate, propionate, formate, and oxalate) did not show a significant response to water table treatments. All organic acids except for oxalate responded to depth. Concentrations of acetate ($F_{1, 163.5}$=11.34, p=<0.0001) dropped significantly from 20 cm (6.93 ±0.50) to 70 cm (3.89 ±0.42). Acetate, propionate, oxalate and formate all displayed significant responses to the vegetation treatments ($F_{2,166}$=5.82, p=0.003; $F_{2,53.81}$=4.02, p=0.02, $F_{2,138.1}$=8.91, p=0.0002; $F_{2,113.8}$=4.61, p=0.01 respectively). All organic acids exhibited highest concentrations in ericoid-only treatments and acetate, propionate, and formate had lowest concentrations in the sedge-only treatments; oxalate was the only organic acid to have lowest concentrations found in the control treatments. Seasonal variation in organic acid concentrations was greater than differences across water table or vegetation treatments. Concentrations for all organic acids dropped significantly after the first flush in the early season (March and May), dropping dramatically in late summer/early fall, with the exception of oxalate which had lower concentrations in the early season than later in the summer and fall (Table 1). Acetate ($F_{1,166}$=2.97, p=0.05), formate ($F_{1,113.8}$=2.30, p=0.1), and oxalate ($F_{1,138.1}$=2.90, p=0.05) displayed marginal water table x vegetation interaction effects, while propionate ($F_{1,53.72}$=1.01, p=0.4) did not.

Neither total nor ferrous iron responded to water table treatments, but total ($F_{2,342}$=7.32, p=0.0008) and ferrous iron ($F_{2,341}$=4.55, p=0.01) both responded to vegetation treatments. Ferrous and total iron displayed higher concentrations in the ericoid-only treatments (6.21 ±0.30 and 5.82 ±0.22 mg L^{-1} respectively) than either the sedge-only (5.49 ±0.22 and 5.03 ±0.22

mg L^{-1} respectively) or the control (5.38 ±0.28 and 5.01 ±0.21 mg L^{-1} respectively) treatments.

4. 4 *Interaction between DOC character and nutrients*

4.4.1 Tannin and UV spec indices vs nitrogen

TDN concentrations increased with total phenolic content, across all sampling dates and depths (**Figures 3b and 3e**). There were significant differences in the relationship between TDN and total phenolics as a function of water table ($F_{1,\ 169.9}$= 8.38, p=0.004) and vegetation type ($F_{2,181.6}$=2.51, p=0.08), as well as a function of water table and vegetation (three way interaction, $F_{2,179.3}$= 2.90, P= 0.05) in analysis of covariance. While the strong positive correlation between TDN and DOC when the water table was high is perhaps not surprising, there were significant differences in the relationship between TDN and DOC as a function of vegetation type when the water table was low (**Figures 3a and 3d**). There were significant differences in the relationship between TDN and UV_{254}:UV_{365} as a function of water table ($F_{1,79.82}$ 14.04, p=0.0003; **Figures 3c and 3f**).

4.4.2 Tannin and UV spec indices vs iron

There were significant differences in the relationship between ferrous iron and DOC concentrations as a function of depth ($F_{2,284}$=3.47, p=0.03) and marginally by vegetation type ($F_{2,284}$=2.39, p=0.09; Figure 4a). Ferrous iron vs total phenolics displayed depth (total phenolics x depth; $F_{2,320}$=5.55, p=0.08) and vegetation influences (total phenolics x veg; $F_{2,320}$=2.57, p=0.0043) (**Figure 4b**). Ferrous iron vs UV_{254}/UV_{365} also exhibited a strong vegetation and water table effect (UV_{254}:UV_{365} x veg; $F_{2,319}$=3.57, p=0.03) (**Figure 4c**). Total dissolved iron concentrations changed across vegetation treatments ($F_{2,342}$ = 7.32, p=0.0008) and with depth ($F_{2,342}$=14.04, p=<0.0001), with higher mean concentrations occurring in the *Ericaceae* treatments and in the shallower porewater depths.

4.5 *Enzymes*

The oxidative enzyme peroxidase and the hydrolytic enzyme did β-Glucosidase both showed significant relationships with DOC, and negative relationships with increasing porewater aromaticity (**Figure 5).** Peroxidase showed a marginal water table effect ($F_{1,102}$=3.41, p=0.07), where low water table treatments had slightly higher potential activity than high water table treatments (0.012±0.0004 and 0.013±0.0003, respectively). We also saw the same result with phosphatase ($F_{1,9.92}$=5.77, p=0.04), where potential activity was also higher in the low water table treatments (4.67 ±0.30; $F_{1,34.39}$=4.68, p=0.04) than the high water table treatments (3.67 ±0.19). All potential enzyme activity increased until July, where activity decreased until October when all enzymes, with the exception of phosphatase, experienced a brief jump in activity.

5. Discussion

Earlier studies on climate change effects on peatland ecosystem functions have investigated the direct effects of water table or vegetation has on the functionality of the peatland ecosystems, but we are lacking in research exploring their interactive effects. Studies have concluded that under drier conditions, increased oxygen can accelerate organic carbon decomposition. However, Laiho (2006) has concluded that whether a peatland’s status as a carbon sink will remain as such or change to a carbon source depends on factors such as the rate of decomposition of the peat that was below the level of water table fluctuation (the ‘old’ peat), and the rates of decomposition of the incoming organic matter under the new environmental conditions, which is largely dependent on vegetation types. In our study, results indicate that the combined effects of drainage and treatments where ericoid shrubs were absent had the most impact on the decomposition process.

5.1 Water table and vegetation effects on DOC and TDN

One of the most important effects of climate change on peatlands is a change in their ability to store carbon. Bridgham et al. (2008) introduced thermal and water table treatments on peat mesocosms and found that the treatments caused a decrease in the peat's ability to store carbon, with the driest sites showing the largest decrease. Strack et al. (2008) determined that water table drawdown facilitated release of carbon in peatlands; immediately following the drawdown, DOC concentrations were elevated and remained slightly elevated for several years. Blodau and Moore (2003) confirmed the impact of water table on carbon cycling, finding that fluctuating water tables increased CO_2 production rates, decreased CH_4 production rates, and increased DOC pools at a rapid rate.

Lower water tables result in an increase in oxygen into previously anoxic environments which could in turn enhance DOC concentration (Strack et al., 2008) and production through increased microbial activity on decomposition of peat (Fenner and Freeman 2011). Freeman et al. (2004) present the idea that aerobic environments, such as those produced with water table drawdown, may result in greater C mineralization but less DOC. In addition, Moore et al. (2008) show that DOC accumulation and C mineralization are closely correlated. In the drained, ericoid-dominated treatments we observed an increase in DOC concentrations, which indicates increased DOC production relative to degradation when more oxidizing conditions are present. Because there was a difference between the ericoid and sedge treatments, it could be attributed to mechanisms of enhanced degradation in the sedge treatments (change in sedge rhizosphere exudates, enzyme production, and oxygenation) or enhanced DOC preservation in the ericaceous treatments (decline in the quality of rhizosphere exudates, lower oxygen delivery).

We found that TDN concentrations in the lower water table treatments increased. These results agree with results of other researchers who also found that DOC and TDN exhibited higher concentrations in low water table treatments in a boreal fen (Kane et al. 2010; Hribljan 2102). Our results indicate that the low water table treatments have the highest concentrations of TDN, with inorganic pools comprising an average of only 1.77% of the total dissolved N pool in the low water table treatments. Macrae et al. (2013) assessed water table impacts on peatland nutrient dynamics and found that water table drawdown decreased net nitrification but had no significant impact on N mineralization, however, they believe that 20cm of drawdown may not be enough to assess a clear impact of water table on nutrient dynamics, and that landscape may also affect nutrient concentrations. Kane et al. (2010) described an increase in N mineralization as water tables declined 7 cm below the surface, but was not able to link the increased mineralization to any treatment effects. Our nitrite and nitrate concentrations were too small for detection, but our ammonium concentrations increased with drainage, which may indicate increased N mineralization with water table drawdown.

Vegetation communities also have very important functions in peatland carbon dynamics. The litter from ericoid shrubs is known to be more recalcitrant and phenolic-rich than the litter provided by sedge species (Jalala et al. 1982; Strack et al. 2006) Ericoid shrubs, due in part to their highly recalcitrant litter, strongly affect peat accumulation and the structure of the peatlands where they grow. Since they lack the aerenchyma found in sedges, they influence the formation of the drier hummock areas (Malmer et al. 2003; Read et al. 2003). Ward et al. (2009) investigated the differences between ericoid shrubs and graminoids and their effects on carbon cycling. They found that ericoid removal had the greatest effect on the carbon flux (lower CO_2 fluxes) compared to sedge and bryophyte removal, as well as having the greatest effect on respiration and photosynthesis, both of which were found to be inhibited by the presence of ericoid shrubs. Removal of the shrubs reduced the constraints on peatland processes they imposed and sedges displayed faster carbon turnover compared to the ericoid shrubs. Vestgarden et al. (2010) and Armstrong et al. (2012) concluded that DOC and DON levels were higher in sites dominated by *Ericaceae* species. However, Armstrong et al. (2012) suggest that site type (hummock, hollow, etc) also plays a role in DOC and DON concentrations. These findings agree with our results. We found that DOC and DON were elevated in treatments where only *Ericaceae* were present. In addition, the DOC with *Ericaceae* is composed of lower molecular weight dissolved organic matter (DOM). This indicates that the DOC in the ericoid-dominated treatments was less degraded relative to the control and sedge-only treatments. The higher DIN concentrations found in the sedge-dominated treatments is also indicative of higher mineralization in the sedge-dominated treatments. An isotope labeling study assessing the consumption versus the degradation of DOC in this system would help us to better understand the dynamics of the changes in DOC quality relative to the vegetation types.

5.2 Interactive effects of water table and vegetation on DOC and TDN

We found significant interactive effects between water table and vegetation on DOC concentrations. At the 20cm depth, when water tables were high, sedge-only treatments had a higher quantity of DOC relative to the control treatments. However, when water table was lowered, DOC increased in quantity in the *Ericaceae*-dominated treatments and overtook sedge-only treatment concentrations, which experienced no significant change in DOC quantity. We believe that there was no change in the DOC found in sedge-dominated treatments with a lowered water table due to the high levels of C mineralization that was already occurring where sedges were present, whereas with the ericoid-dominated treatments, water table drawdown may have facilitated more degradation which in turn increased DOC production.

Our findings suggest that combined effects of changes in plant functional type and water table position on porewater C and N cycling were attributed to the removal of ericaceous shrubs. With a lowered water table, the amount of N per unit C increased when sedges were present and *Ericaceae* were absent. The lower C:N ratio in the sedge-only treatments agrees with results found by Vestgarden et al. (2010) and Kalbitz et al. (2000) who also found a lower C:N ratio with sedge dominance, indicating increased mineralization in sedge-only plots. As discussed earlier, these data suggest that removal of ericoid litter input combined with a more oxidizing environment influenced by lowered water table and vegetation effects, such as aerenchyma cells found in sedges, contribute to enhanced mineralization of organic matter, and may contribute to enhanced DON mineralization.

5.3 Water table and vegetation effects on DOC quality

The quality of the carbon was affected by both the water table and vegetation treatments. We found lower $SUVA_{254}$ values in the lower water table treatments, reflecting a decline in porewater aromaticity. This contrasts with other research on peatland water table effects on carbon quality such as Höll et al (2009) who found that aromaticity increased upon water table drawdown. Our results suggests that another factor is dominating or interacting with water table to influence the lability of the DOC, possibly the vegetation species present. The UV_{465}:UV_{665} ratio, generally indicative of DOC composed of higher fulvic acid content (Blodau and Siems, 2012), was higher in the low water table treatments and was greater in the deeper peat profile (70 cm) than the shallower peat (20 and 40cm). This increased UV_{465}:UV_{665} ratio is indicative of fulvic acid content in the DOC pool, which is readily produced by plant litter decomposition in aerobic environments, as well as indicating DOC composed of compounds more condensed and more aromatic than bulk celluloses or amino sugars (Visser et al. 1983). Water table drawdown also resulted in DOC concentrations with an increased UV_{254}:UV_{365} ratio, likely indicating DOC that is composed of higher molecular weight compounds, which can accumulate in porewater (Ready and Delaune 2008).

Vegetation treatments by themselves did not significantly impact carbon quality; however, interactions between water table and vegetation did have an effect. When *Ericaceae* are absent, aromaticity (represented by $SUVA_{254}$) increased with drainage (**Figure 2a**). As previously discussed, *Ericaceae* have been associated with highly recalcitrant litter that inhibits microbial and enzymic degradation due to its high tannin and lignin content (Joannisse et al. 2007). It is possible that because of the ERC associated with ericoid shrubs capable of degrading the more recalcitrant components of the organic matter, their removal could be reducing the number microbes responsible for mineralization. When *Ericaceae* are absent, UV_{465}:UV_{665} increases upon water table drawdown. This result strengthens the argument that *Ericaceae* are highly influential of the carbon quality in these systems.

5.4 Water table and vegetation effects on porewater character

Acetate, which accumulates in bog water partly due to the absence of aceticlastic methanogens (Hines and Duddleston 2001), has been found to be an important carbon intermediate in anaerobic systems. Acetate has an important role in methanogenesis, and along with fermentation intermediates, turns over rapidly due to bacterial consumption (Williams and Crawford 1985; Horn et al. 2003). Acetate has been reported to have higher concentrations in late winter and early spring, dropping in concentration by summer (Shannon and White 1996; Duddleston et al. 2002; Hribljan 2012).

Our results also suggest a seasonal effect on acetate concentrations, a trend that was also seen in propionate and formate.

In addition to seasonal effects on acetate, vegetation effects have also been reported. Shannon and White (1996) report finding higher concentrations of acetate in sedge-dominated areas. We found contradictory results; we found that acetate concentrations were higher in *Ericaceae*-dominated treatments. Reasons for this may be related to higher sulfate concentrations found in the sedge-dominated treatments; it has been found that higher sulfate concentrations coincide with lower acetate concentrations (Shannon and White 1996). Another factor driving these results may be due to a decrease in acetogenesis in the sedge-dominated treatments; the higher oxidation provided by the sedges results in higher mineralization of low molecular weight DOM.

Oxygen availability also has an effect on iron speciation in oligotrophic peatlands. Fe(II) has been found to have low concentrations in oligotrophic peatlands (Kusel et al. 2008), which has been attributed to low atmospheric deposition, one of the main pathways in which oligotrophic peatlands accumulate iron as there is little or no groundwater flow in these systems. Kusel et al. (2008) found higher accumulation of ferric iron in the upper soil compared to deeper in the peat profile, possibly resulting from oxidation of ferrous iron, and Roden and Wetzel (1996) reported that the high oxygen content found in the rhizosphere of sedge-inhabited sites may be responsible for Fe(II) oxidation, indicated by high amounts of amorphous Fe(III). Chacon et al. (2006) found that additions of plant-produced labile carbon significantly increased soluble iron concentrations. Given these findings, it is surprising that our research did not show any direct effects of water table or vegetation treatments on iron speciation. Notwithstanding, we did see a change in the relationships between DOC and ferrous iron as a function of the dominant plant functional types present. The change in ferrous iron per unit DOC was strongest when sedges were present and ericoids were absent, which suggests that labile carbon compounds associated with sedge biomass and sedge root exudates, in addition to oxygen delivery through aerenchymous tissue, facilitate iron oxidation and change the relationship between Fe(II) and dissolved carbon components (**Figure 4**). We also found that sedge-dominated treatments had smaller mean concentrations of total iron. It could be suggested that the changes in carbon quality caused by dominant vegetation types is altering the affinity for dissolved iron and DOC complexation (Satoh et al. 2006). As our research was done using porewater, we were not able to detect the iron that was attached to organic material in the solid phase of the mesocosms. Since it has been shown that Fe concentrations differ between porewater and solid phase (Koretsky et al. 2006), it would be helpful to compare iron concentrations in porewater and solid phase peat in addition to future work examining redox potential in relation to vegetation and water table influence to better elucidate their individual and combined influences on iron speciation and its potential impact for anaerobic metabolism.

5.5 Water table and vegetation effects on potential enzyme activity

Oxidative enzymes, peroxidase and phenol oxidase, are so named because of their use of oxygen to catalyze the breakdown of phenolic compounds. Their activity has been found to be inhibited by phenolic compounds (Joanisse et al. 2007) as well as by anaerobic conditions (Freeman et al. 2004). We did find that peroxidase activity was higher when water table was lower, which suggests that the increase in oxygen available with water table drawdown is contributing to an increase in oxidative enzyme activity. Enzymes found in porewater have a much slower degree of activity than do enzymes associated with the solid phase in soil matrices (reference needed), so this oxygen affect may have been enhanced in the solid phase. In addition to the water table effect, across all treatments we also saw a positive relationship between oxidative enzyme activity and total

DOC, and a negative relationship with porewater aromaticity. This overall trend in oxidative enzyme activity does not seem to fit with the patterns of porewater character observed with the vegetation treatments, as we observed higher DOC and lower aromaticity occurring in the absence of sedges- where dissolved oxygen should also be in lower supply, and as such, oxidative enzyme activity should be slower. It could be that not enough time has elapsed for enzyme activities in the porewater to accurately reflect treatment effects associated with the solid phase.

We also found a significant treatment effects on one of the hydrolytic enzymes-phosphatase. Phosphatase exhibited a response to water table where potential activity was found to be higher when water table was lower. This agrees with several other studies and is attributed to a reduction in enzyme inhibitors such as iron and phenolics (Freeman et al. 1996; Kang and Freeman 1999), although it has been suggested that hydrolytic enzyme activity is driven more by pH rather than water table or vegetation influences (Sinsabaugh et al. 2008). All enzymes showed a stronger seasonal than treatment effect. There has been some research into the response of enzymes to drought conditions. Freeman et al. (1997) discovered that during water-logged conditions, β-glucosidase was inversely correlated with DOC, but that this relationship disappeared when the water table was lowered during a simulated drought. Our results did show a positive correlation between β-glucosidase and DOC and a negative relationship with $SUVA_{254}$. These relationships did not appear to be driven by water table or vegetation treatments, which is surprising given the impacts polyphenols have on enzyme activity (Joanisse et al. 2007). Also surprising was the lack of relationship between hydrolytic or oxidative enzymes and total phenolic concentrations. The positive correlation between β-glucosidase and DOC could be related to the enzyme's role in the carbon cycle where it helps degrade the peat material and thus cause DOC production. Future research investigating the difference in activity between porewater and the solid phase of peat would shed more light on enzymic activity in these systems.

6. Conclusions

We examined the potential interactions between vegetation and water table on peat carbon quality and quantity and C mineralization and the potential impacts that climate-change-influenced water table level could have on the carbon storage ability of peatlands. Our water table manipulations are within the climate change predictions for northern peatlands and our vegetation manipulations represent potential vegetation dominance patterns. The peat chemical quality exhibited differences in composition and lability across the water table and vegetation treatments. We found that increasing the aerobic zone through water table drawdown is increasing mineralization, which appears to be strongly increased through ericoid removal. These results suggest that long-term water table drawdown combined with different vegetation type dominance can have significantly different impacts on the biogeochemistry of northern peatlands. Future research examining changes in redox potential as well as C labeling studies will shed more light on carbon production and decomposition processes in these systems.

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8. Tables and Figures

Table 1: Monthly DOC, TDN, and organic acid averages across water table (WT) and vegetation (Veg) treatments for the 2012 growing season across all depths. Standard errors of the mean values are in parentheses. Mean values are presented in bold text.

WT	Veg	Month	DOC	TDN	Acetate	Propionate	Formate	Oxalate
High	Sedge	May-June	91.48 (3.48)	2.61(0.14)	4.56 (1.02)	2.49 (0.58)	0.61 (0.06)	0.26 (0.01)
		July-August	77.07 (2.67)	2.53 (0.10)	7.11 (1.45)	2.87 (0.55)	0.58 (0.06)	0.21 (0.02)
		Sept-Oct	95.48 (4.82)	2.77 (0.19)	0.28 (0.11)	0.06 (0.05)	0.35 (0.04)	0.27 (0.02)
			88.01	**2.64**	**3.98**	**1.81**	**0.51**	**0.25**
	Ericaceae	May-June	92.10 (3.22)	2.81 (0.09)	4.69 (0.82)	2.60 (0.53)	0.60 (0.05)	0.28 (0.01)
		July-August	75.85 (2.23)	2.62 (0.07)	6.23 (0.94)	2.43 (0.44)	0.54 (0.05)	0.20 (0.01)
		Sept-Oct	104.06 (5.57)	3.35 (0.20)	0.16 (0.06)	0.02 (0.02)	0.43 (0.02)	0.31 (0.02)
			90.67	**2.93**	**3.69**	**1.68**	**0.52**	**0.26**
	Control	May-June	77.31 (2.57)	2.22 (0.07)	3.12 (0.67)	1.41 (0.38)	0.50 (0.04)	0.25 (0.01)
		July-August	69.97 (2.38)	2.35 (0.08)	6.68 (0.80)	2.46 (0.33)	0.48 (0.04)	0.20 (0.02)
		Sept-Oct	94.08 (3.91)	2.70 (0.13)	0.77 (0.28)	0.16 (0.08)	0.44 (0.05)	0.27 (0.02)
			80.45	**2.42**	**3.52**	**1.35**	**0.47**	**0.24**
Low	Sedge	May-June	97.56 (5.07)	3.43 (0.25)	1.06 (0.41)	0.33 (0.18)	0.43 (0.02)	0.28 (0.01)
		July-August	73.14 (4.39)	2.88 (0.21)	3.82 (0.62)	1.45 (0.31)	0.37 (0.04)	0.18 (0.01)
		Sept-Oct	91.34 (6.74)	3.63 (0.32)	0.02 (0.01)	0.00	0.14 (0.04)	0.20 (0.02)
			87.35	**3.31**	**1.63**	**0.59**	**0.31**	**0.22**
	Ericaceae	May-June	95.92 (3.35)	2.74 (0.11)	4.11 (0.88)	1.90 (0.51)	0.53 (0.04)	0.32 (0.01)
		July-August	82.56 (4.11)	2.56 (0.13)	14.71 (0.94)	4.87 (0.39)	0.79 (0.04)	0.28 (0.02)
		Sept-Oct	107.65 (8.96)	3.24 (0.31)	0.29 (0.10)	0.05 (0.02)	0.30 (0.06)	0.28 (0.03)
			95.38	**2.85**	**6.37**	**2.28**	**0.54**	**0.29**
	Control	May-June	91.05 (1.68)	2.91 (0.13)	2.86 (1.10)	1.69 (0.72)	0.52 (0.07)	0.24 (0.02)
		July-August	78.41 (2.02)	2.57 (0.07)	9.92 (1.21)	2.78 (0.39)	0.59 (0.05)	0.18 (0.02)
		Sept-Oct	83.16 (4.43)	2.95 (0.22)	0.09 (0.07)	0.00	0.27 (0.05)	0.21 (0.02)
			84.21	**2.81**	**4.29**	**1.49**	**0.46**	**0.21**

Table 2: Monthly UVA indices ($SUVA_{254}$, UVA λ254: λ365, UVA λ365: λ465, UVA λ465: λ665) across water table (WT) and vegetation (Veg) treatments for the 2012 growing season across all depths. Standard errors of the mean values are in parentheses. Mean values are presented in bold text.

High	Sedge	May-June	4.10 (0.11)	0.86 (0.02)	4.51 (0.14)	5.53 (0.15)
		July-August	4.31 (0.10)	0.89 (0.02)	4.50 (0.12)	5.43 (0.15)
		Sept-Oct	4.10 (0.11)	0.82 (0.03)	4.23 (0.19)	5.47 (0.14)
			4.17	**0.85**	**4.41**	**5.48**
	Ericaceae	May-June	4.17 (0.07)	0.86 (0.02)	4.33 (0.05)	5.50 (0.11)
		July-August	4.33 (0.06)	0.89 (0.02)	4.48 (0.05)	5.74 (0.14)
		Sept-Oct	4.02 (0.10)	0.76 (0.03)	4.11 (0.04)	5.94 (0.14)
			4.17	**0.84**	**4.30**	**5.73**
	Control	May-June	4.58 (0.12)	0.92 (0.02)	4.34 (0.15)	5.42 (0.27)
		July-August	4.62 (0.12)	0.92 (0.02)	4.49 (0.18)	5.69 (0.22)
		Sept-Oct	4.24 (0.10)	0.82 (0.03)	4.26 (0.26)	5.97 (0.30)
			4.48	**0.89**	**4.36**	**5.69**
Low	Sedge	May-June	4.19 (0.13)	0.84 (0.03)	4.49 (0.09)	5.95 (0.11)
		July-August	4.55 (0.11)	0.92 (0.03)	4.48 (0.09)	5.62 (0.16)
		Sept-Oct	3.92 (0.10)	0.88 (0.04)	4.79 (0.10)	7.63 (0.33)
			4.22	**0.88**	**4.59**	**6.40**
	Ericaceae	May-June	4.16 (0.10)	0.86 (0.02)	4.41 (0.06)	5.46 (0.11)
		July-August	4.14 (0.09)	0.90 (0.02)	4.38 (0.07)	5.43 (0.15)
		Sept-Oct	3.77 (0.16)	0.84 (0.04)	4.58 (0.09)	6.99 (0.42)
			4.02	**0.87**	**4.46**	**5.96**
	Control	May-June	4.02 (0.10)	0.86 (0.02)	4.79 (0.20)	5.99 (0.26)
		July-August	4.08 (0.08)	0.88 (0.02)	4.83 (0.21)	5.70 (0.16)
		Sept-Oct	3.85 (0.10)	0.93 (0.04)	4.94 (0.22)	7.02 (0.29)
			3.98	**0.89**	**4.85**	**6.24**

Table 3: Hydrolase and oxidase monthly potential activity averages across water table (WT) and vegetation (Veg) treatments for 20 cm depth. Standard errors of the mean values are in parentheses. Mean values are presented in bold text.

WT	Veg	Month	N-Acetylglucosidase	β-Glucosidase	Cellobiohydrolase	Phosphatase	Phenol Oxidase	Peroxidase
High	Sedge	May-June	0.44 (0.06)	0.67 (0.08)	0.09 (0.01)	4.48 (0.64)	0.0004 (0.0002)	0.014 (0.001)
		July-Aug	0.42 (0.09)	0.59 (0.08)	0.13 (0.01)	4.27 (0.38)	0.0002 (0.0002)	0.010 (0.001)
		Sept-Oct	0.55 (0.28)	0.59 (0.20)	0.05 (0.004)	2.40 (0.27)	0.0019 (0.0004)	0.013 (0.001)
			0.47	**0.61**	**0.09**	**3.72**	**0.0008**	**0.012**
	Ericaceae	May-June	0.44 (0.04)	0.73 (0.09)	0.09 (0.01)	4.20 (0.54)	0.0002 (0.0001)	0.014 (0.001)
		July-Aug	0.41 (0.05)	0.63 (0.09)	0.12 (0.02)	4.12 (0.30)	0.0000	0.010 (0.0005)
		Sept-Oct	0.78 (0.51)	0.69 (0.26)	0.06 (0.004)	2.56 (0.21)	0.0018 (0.0003)	0.013 (0.001)
			0.54	**0.69**	**0.09**	**3.63**	**0.0007**	**0.012**
	Control	May-June	0.45 (0.06)	0.53 (0.10)	0.08 (0.01)	4.57 (0.60)	0.0004 (0.0002)	0.013 (0.001)
		July-Aug	0.43 (0.04)	0.55 (0.07)	0.13 (0.02)	4.68 (0.38)	0.0001 (0.0001)	0.009 (0.001)
		Sept-Oct	0.59 (0.34)	0.59 (0.30)	0.05 (0.008)	2.76 (0.15)	0.002 (0.0005)	0.013 (0.001)
			0.49	**0.55**	**0.08**	**4.01**	**0.0009**	**0.012**
Low	Sedge	May-June	0.48 (0.05)	0.84 (0.15)	0.09 (0.01)	5.91 (0.92)	0.0004 (0.0002)	0.013 (0.001)
		July-Aug	0.46 (0.06)	0.82 (0.13)	0.16 (0.03)	5.56 (0.68)	0.0000	0.010 (0.0005)
		Sept-Oct	0.39 (0.12)	0.60 (0.18)	0.06 (0.005)	3.42 (0.51)	0.0019 (0.0004)	0.013 (0.0004)
			0.44	**0.75**	**0.11**	**4.96**	**0.0008**	**0.012**
	Ericaceae	May-June	0.50 (0.05)	0.75 (0.09)	0.11 (0.01)	4.85 (0.54)	0.0006 (0.0003)	0.014 (0.001)
		July-Aug	0.41 (0.03)	0.66 (0.10)	0.16 (0.02)	4.70 (0.56)	0.0004 (0.0004)	0.010 (0.002)
		Sept-Oct	0.76 (0.47)	0.61 (0.21)	0.07 (0.02)	2.84 (0.41)	0.0023 (0.0006)	0.013 (0.0005)
			0.56	**0.67**	**0.11**	**4.13**	**0.0011**	**0.013**
	Control	May-June	0.42 (0.06)	0.80 (0.11)	0.10 (0.02)	6.33 (1.29)	0.0003 (0.0001)	0.014 (0.001)
		July-Aug	0.37 (0.03)	0.69 (0.07)	0.15 (0.02)	5.41 (1.19)	0.0000	0.012 (0.001)
		Sept-Oct	1.63 (1.37)	0.65 (0.26)	0.06 (0.004)	3.08 (0.38)	0.0018 (0.0003)	0.013 (0.0005)
			0.81	**0.71**	**0.11**	**4.94**	**0.0007**	**0.013**

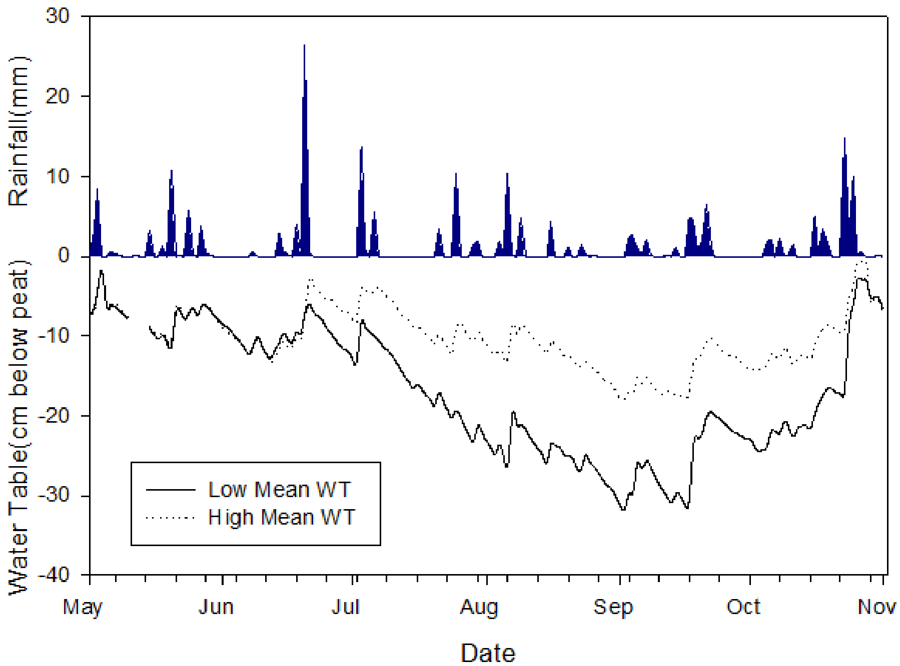

Figure 1. Rainfall (top figure) and water table height below peat surface (bottom figure) for 2012 growing season, May - November.

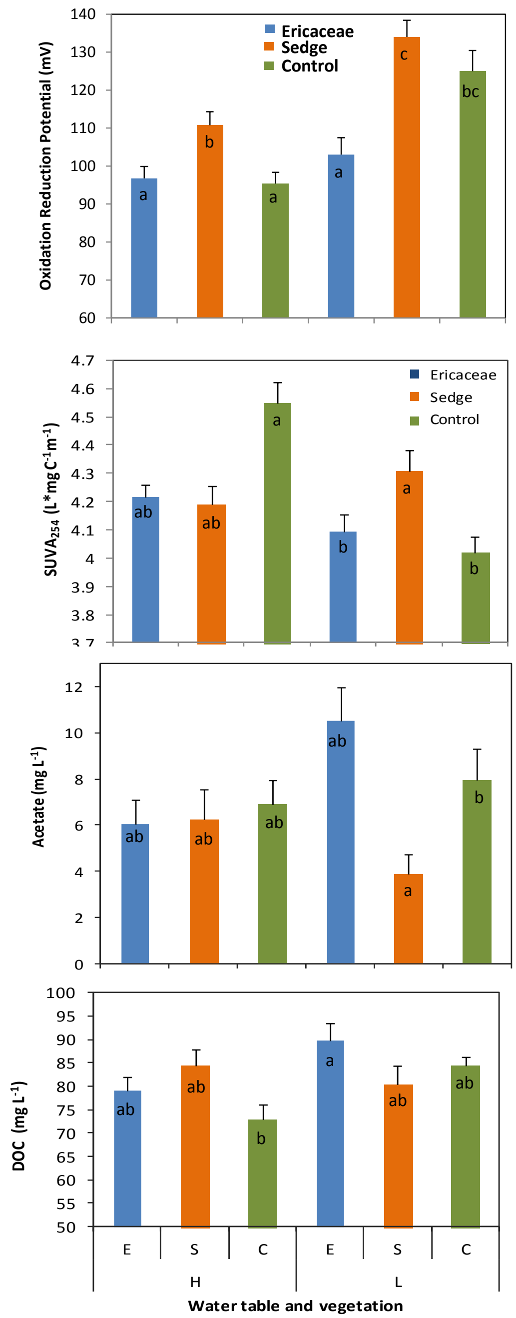

Figure 2. Histogram representing (A) Oxidation Reduction Potential across all depths, (B) $SUVA_{254}$ at depth 20 cm, (C) acetate at depth 20 cm, and (D) DOC at depth 20 cm by water table position (High (H) and Low (L)) and vegetation type (Ericoid (E), Sedge (S), or Control (C)),. F and p values represent significance of the vegetation type x water table interaction. Different letters denote significant differences (Tukey-Kramer post-hoc comparison of means tests).

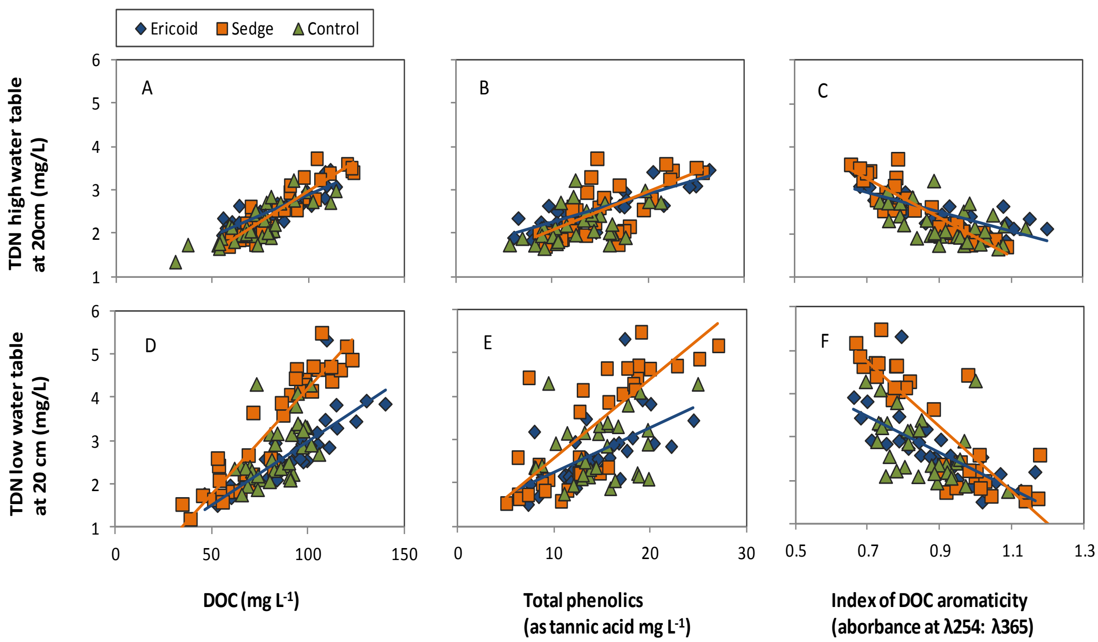

Figure 3. Relationship between TDN and (A) DOC, (B) total phenolics, and (C) UV absorbance at λ254: λ365 at 20 cm and high water table; and TDN and (D) DOC, (E) total phenolics, and (F) UV absorbance at λ254: λ365 at 20 cm and low water table. There were significant differences in the relationships as a function of water table and vegetation between TDN and DOC [$F_{2, 147}$ =6.50, p= 0.002], TDN and total phenolics [$F_{2, 168}$ =4.99, p= 0.0024], and TDN and UV absorbance at λ254:λ365 [$F_{2, 140}$ =10.26, p=<0.0001].

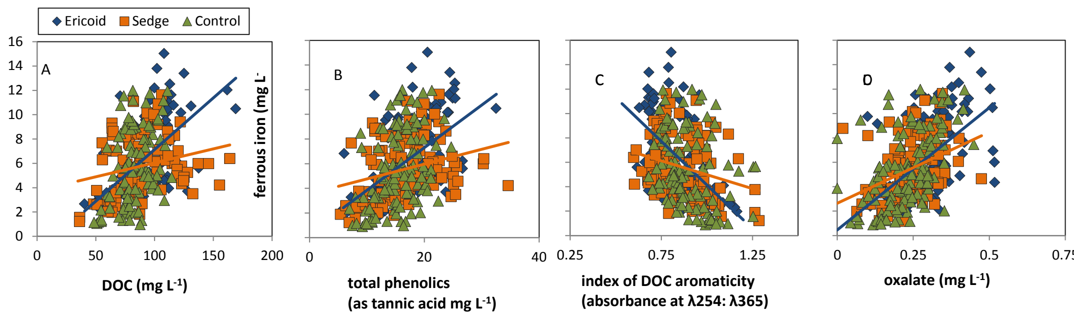

Figure 4. Relationship between porewater ferrous iron and (A) DOC, (B) total phenolics, (C) UV absorbance at λ254: λ365, and (D) oxalate across all depths as a function of vegetation treatments. There were significant differences for these relationships [A: $F_{2, 286}$ =7.82, p=0.0005; B: $F_{2, 322}$ =5.34, p=0.0052; C: $F_{2, 252}$ = 7.12, p=0.0010; D: $F_{2, 338}$ =2.03, p=0.1333].

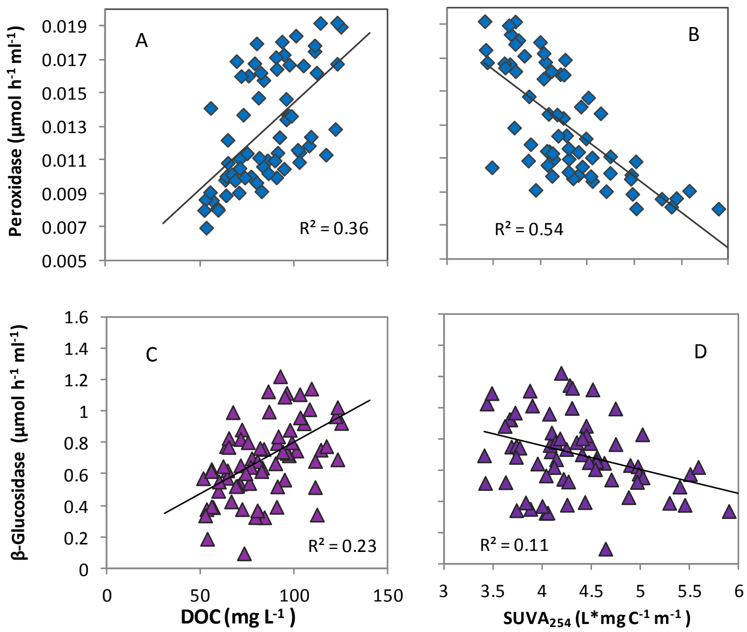

Figure 5. Scatterplots relating potential peroxidase activity to (A) DOC and (B) SUVA254 and potential β-Glucosidase activity to (C) DOC and (D) SUVA254. These plots show us that while potential peroxidase and β-Glucosidase activity exhibit an increase as DOC quantity increases, higher aromaticity DOC, signified here by SUVA, may inhibit peroxidase activity. These relationships are statistically significant; (A) $F_{1,49}$=27.07, p=<0.0001; (B) $F_{1,46}$=36.91, p=<0.0001); (C) $F_{1,56}$=29.96, p=<0.0001; (D) $F_{1,58}$=27.86, p=<0.0001.

Appendix A

Table 4: Raw data files

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	3/31/2012	20	H	S							110.7	3.39		
2	3/31/2012	20	H	E							76.75	2.376		
3	3/31/2012	20	H	U							30.31	1.347		
4	3/31/2012	20	L	U							69.74	2.398		
5	3/31/2012	20	L	S							87.11	3.596		
6	3/31/2012	20	L	E							59.76	1.731		
7	3/31/2012	20	L	S							38.85	1.197		
8	3/31/2012	20	H	U							70.34	2.008		
9	3/31/2012	20	L	U							70.8	2.308		
10	3/31/2012	20	H	E							59.75	2.265		
11	3/31/2012	20	L	E							115.1	3.297		
12	3/31/2012	20	H	S							67.72	2.03		
13	3/31/2012	20	L	E							83.52	2.589		
14	3/31/2012	20	L	U							105.7	2.693		
15	3/31/2012	20	H	U							97.86	2.969		
16	3/31/2012	20	H	E							87.4	2.62		
17	3/31/2012	20	H	S										
18	3/31/2012	20	L	S							69.05	2.667		
19	3/31/2012	20	H	U							92.17	2.772		
20	3/31/2012	20	H	E							73.84	2.086		
21	3/31/2012	20	H	S							69.73	2.333		
22	3/31/2012	20	L	E							140.2	3.852		
23	3/31/2012	20	L	S							112.5	4.38		
24	3/31/2012	20	L	U							88.71	2.432		
1	3/31/2012	40	H	S							109.6	3.497		
2	3/31/2012	40	H	E							81.38	2.499		
3	3/31/2012	40	H	U							31.68	1.307		
4	3/31/2012	40	L	U							63.26	2.26		
5	3/31/2012	40	L	S							113.4	4.014		
6	3/31/2012	40	L	E							61.96	1.796		
7	3/31/2012	40	L	S							47	1.424		
8	3/31/2012	40	H	U							68.19	2.115		
9	3/31/2012	40	L	U							70.32	2.279		
10	3/31/2012	40	H	E							67.86	2.48		
11	3/31/2012	40	L	E							102.6	2.917		
12	3/31/2012	40	H	S							68.07	2.042		
13	3/31/2012	40	L	E							81.82	2.461		
14	3/31/2012	40	L	U							106	2.686		
15	3/31/2012	40	H	U							106	3.186		
16	3/31/2012	40	H	E							78.17	2.35		
17	3/31/2012	40	H	S							89.09	3.049		
18	3/31/2012	40	L	S							61.14	2.437		
19	3/31/2012	40	H	U							87.97	2.799		
20	3/31/2012	40	H	E							81.75	2.364		
21	3/31/2012	40	H	S							73.35	2.435		
22	3/31/2012	40	L	E							131.1	3.75		
23	3/31/2012	40	L	S							104.8	4.21		
24	3/31/2012	40	L	U							86.53	2.416		
1	3/31/2012	70	H	S							111.9	3.606		
2	3/31/2012	70	H	E							98.72	3.213		
3	3/31/2012	70	H	U							57.45	1.727		
4	3/31/2012	70	L	U							74.45	2.736		
5	3/31/2012	70	L	S							118.2	3.997		
6	3/31/2012	70	L	E							68.85	2.023		
7	3/31/2012	70	L	S							42.86	1.229		
8	3/31/2012	70	H	U							79.38	2.448		
9	3/31/2012	70	L	U							79.68	2.555		
10	3/31/2012	70	H	E							94.64	3.552		
11	3/31/2012	70	L	E							83.7	2.517		
12	3/31/2012	70	H	S							73.6	2.057		
13	3/31/2012	70	L	E							91.44	3.027		
14	3/31/2012	70	L	U							67.43	1.997		
15	3/31/2012	70	H	U							72.96	2.415		
16	3/31/2012	70	H	E							91.35	2.966		
17	3/31/2012	70	H	S										
18	3/31/2012	70	L	S							67.96	2.573		
19	3/31/2012	70	H	U							98.53	3.255		
20	3/31/2012	70	H	E							90.91	2.673		
21	3/31/2012	70	H	S							76.62	2.393		
22	3/31/2012	70	L	E							130.9	3.798		
23	3/31/2012	70	L	S							94.94	3.827		
24	3/31/2012	70	L	U							84.65	2.505		

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	3/31/2012	20	H	S				0	2.1168	0	0	0	0.0745	0	28.7139	11.4816	1.2656	0.2666
2	3/31/2012	20	H	E				0.0281	1.5744	0	0	0	0.1016	0	8.1897	3.1181	0.7153	0.2222
3	3/31/2012	20	H	U				0.0246	4.1889	0	0	0	0.0648	0	9.8882	2.4693	0.3384	0.0874
4	3/31/2012	20	L	U				0.0217	0.9036	0	0	0	0.103	0	13.6021	5.4421	0.7557	0.205
5	3/31/2012	20	L	S				0.0417	1.5636	0	0	0	0.1063	0.5135	20.5821	9.0841	1.0131	0.1889
6	3/31/2012	20	L	E				0	1.1377	0	0	0	0.0936	0	21.9853	6.9573	0.813	0.1609
7	3/31/2012	20	L	S				0	1.1704	0	0	0	0.0785	0	13.6209	5.0056	0.6107	0.0967
8	3/31/2012	20	H	U				0.0236	0.8719	0	0	0	0.0695	0	9.0451	3.6678	0.5907	0.1722
9	3/31/2012	20	L	U				0	1.3123	0	0	0	0.0578	0	26.8591	10.4188	1.0942	0.0458
10	3/31/2012	20	H	E				0	1.326	0	0	0	0.0882	0	21.754	10.1961	0.9991	0.0611
11	3/31/2012	20	L	E				0	1.3896	0	0	0	0.0854	0	30.3009	11.9215	1.3043	0.2345
12	3/31/2012	20	H	S				0.0267	1.3061	0	0	0	0.0772	0	7.9068	3.3579	0.4675	0.1013
13	3/31/2012	20	L	E				0	1.2347	0	0	0	0.0691	0	16.3947	5.9961	0.7507	0.0779
14	3/31/2012	20	L	U				0	1.2168	0	0	0	0.0722	0	20.8761	8.9119	0.9454	0
15	3/31/2012	20	H	U				0	1.1719	0	0	0	0.0481	0	29.9189	10.6238	1.3167	0
16	3/31/2012	20	H	E				0.0231	1.6295	0	0	0	0.0451	0	12.0597	3.0223	0.7813	0
17	3/31/2012	20	H	S														
18	3/31/2012	20	L	S				0.0236	1.2474	0	0	0	0.0688	0	10.7798	3.9677	0.5673	0
19	3/31/2012	20	H	U				0	1.1449	0	0	0	0.0651	0	14.1342	3.7902	0.6895	0
20	3/31/2012	20	H	E				0	1.1494	0	0	0	0.0482	0	21.1579	7.2259	0.8277	0
21	3/31/2012	20	H	S				0	0	0	0	0	0.028	0	0	0	0	0
22	3/31/2012	20	L	E				0	1.6984	0	0	0	0.0708	0	24.2789	7.7047	1.1397	0.1536
23	3/31/2012	20	L	S				0	1.6351	0	0	0	0.0694	0.4105	19.6941	9.8583	1.0578	0
24	3/31/2012	20	L	U				0	1.4975	0	0	0	0.0657	0	9.2813	3.1664	0.4681	0
1	3/31/2012	40	H	S				0	2.0483	0	0	0	0.1588	0	27.6078	11.149	1.2217	0.371
2	3/31/2012	40	H	E				0.0252	1.4433	0	0	0	0.1398	0	7.3777	2.8425	0.7306	0.3019
3	3/31/2012	40	H	U				0.0146	0.7463	0	0	0	0.1283	0	3.2835	0	0	0.1373
4	3/31/2012	40	L	U				0.0242	0.7616	0	0	0	0.1564	0	12.583	5.4738	0.6995	0.2776
5	3/31/2012	40	L	S				0.0315	1.6711	0	0	0	0.1485	0.3175	8.4917	3.722	0.5757	0.2144
6	3/31/2012	40	L	E				0	1.0957	0	0	0	0.1388	0	18.5365	5.8064	0.7467	0.1418
7	3/31/2012	40	L	S				0.021	0.8651	0	0	0	0.1369	0	12.8687	4.9331	0.6668	0.1212
8	3/31/2012	40	H	U				0.0216	0.9969	0	0	0	0.1425	0	9.2126	3.707	0.6576	0.171
9	3/31/2012	40	L	U				0	1.1401	0	0	0	0.141	0	24.6601	8.5389	1.2336	0.0825
10	3/31/2012	40	H	E				0	1.2091	0	0	0	0.1416	0	19.9063	10.2452	1.1454	0.1108
11	3/31/2012	40	L	E				0	1.1723	0	0	0	0.1254	0	29.5205	10.6552	1.1994	0.2052
12	3/31/2012	40	H	S				0.0243	1.2846	0	0	0	0.1102	0	8.0847	3.2618	0.5754	0.1436
13	3/31/2012	40	L	E				0.0225	1.0843	0	0	0	0.127	0	16.6691	6.4932	0.8651	0.1204
14	3/31/2012	40	L	U				0	1.1098	0	0	0	0.125	0	18.1846	8.0877	1.0471	0.0581
15	3/31/2012	40	H	U				0	1.1014	0	0	0	0.1212	0	28.5686	8.9043	1.2569	0.0574
16	3/31/2012	40	H	E				0	1.265	0	0	0	0.1341	0	12.9306	3.3726	0.7116	0.0778
17	3/31/2012	40	H	S				0.0266	2.2556	0	0	0	0.297	0.4125	14.7914	6.6426	0.9446	0.0205
18	3/31/2012	40	L	S				0.0225	0.9941	0	0	0	0.1052	0	9.6649	3.5446	0.5782	0
19	3/31/2012	40	H	U				0.0222	1.266	0	0	0	0.1159	0	12.2013	3.2023	0.6984	0.0167
20	3/31/2012	40	H	E				0.0204	1.3021	0	0	0	0.121	0	19.7008	6.5484	0.8511	0.2186
21	3/31/2012	40	H	S				0.0278	1.6827	0	0	0	0.1144	0	0.1182	0	0.4134	0
22	3/31/2012	40	L	E				0	1.6909	0	0	0	0.1225	0	20.1766	7.0164	1.0221	0.2111
23	3/31/2012	40	L	S				0	7.9887	0	0	0	0.1211	0.5347	18.8314	9.8038	1.1223	0.0173
24	3/31/2012	40	L	U				0.0237	1.4694	0	0	0	0.1405	0	9.2316	3.0246	0.5545	0.0363
1	3/31/2012	70	H	S				0	1.5515	0	0	0	0.0697	0	18.1023	8.5184	0.9371	0.3704
2	3/31/2012	70	H	E				0.0417	1.5279	0	0	0	0.0777	0	4.6233	1.784	0.5717	0.3573
3	3/31/2012	70	H	U				0.031	0.8227	0	0	0	0.0611	0	5.1401	1.1827	0.3296	0.2284
4	3/31/2012	70	L	U				0.0341	1.0585	0	0	0	0.072	0	2.2829	0.7607	0.4012	0.1986
5	3/31/2012	70	L	S				0.0448	1.8063	0	0	0	0.0833	0.2028	4.4007	1.7351	0.418	0.2639
6	3/31/2012	70	L	E				0.0328	1.0372	0	0	0	0.0705	0	16.3823	5.6737	0.7349	0.1957
7	3/31/2012	70	L	S				0.0268	0.9838	0	0	0	0.0937	0	6.3474	2.3949	0.3764	0.106
8	3/31/2012	70	H	U				0.0401	1.0839	0	0	0	0.0805	0	5.4749	2.4394	0.4628	0.1735
9	3/31/2012	70	L	U				0	1.1557	0	0	0	0.0645	0	22.5382	9.4313	1.196	0.1196
10	3/31/2012	70	H	E				0.0324	1.2134	0	0	0	0.0746	0	13.2242	7.8796	0.9032	0.0911
11	3/31/2012	70	L	E				0.0334	1.3639	0	0	0	0.0698	0	10.1586	4.0011	0.61	0.0698
12	3/31/2012	70	H	S				0.0401	1.5665	0	0	0	0.0787	0	4.2338	1.6641	0.4182	0.1001
13	3/31/2012	70	L	E				0.0273	0.8059	0	0	0	0.0818	0	12.7722	4.9866	0.6844	0.1147
14	3/31/2012	70	L	U				0.0321	1.0495	0	0	0	0.0562	0	0.1569	0	0.2688	0
15	3/31/2012	70	H	U				0.0312	0.855	0	0	0	0.0623	0	0.0372	0	0.1499	0
16	3/31/2012	70	H	E				0.0395	1.4743	0	0	0	0.07	0	7.214	1.8546	0.5988	0
17	3/31/2012	70	H	S														
18	3/31/2012	70	L	S				0.0321	1.1525	0	0	0	0.0578	0	7.2243	2.8712	0.4338	0
19	3/31/2012	70	H	U				0.0352	1.3264	0	0	0	0.0771	0	12.3779	3.7384	0.6917	0
20	3/31/2012	70	H	E				0.0302	1.1293	0	0	0	0.0652	0	17.1034	6.6483	0.7819	0
21	3/31/2012	70	H	S				0.0418	1.546	0	0	0	0.0515	0	0.3293	0	0.3298	0
22	3/31/2012	70	L	E				0	0.1477	0	0	0	0.0377	0	5.195	1.5191	0.2079	0
23	3/31/2012	70	L	S				0.033	1.841	0	0	0	0.0541	0.2891	11.5762	6.8314	0.7811	0
24	3/31/2012	70	L	U				0.0369	1.3559	0	0	0	0.0608	0	5.4354	1.7578	0.4983	0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	5/1/2012	20	H	S	14.703516	0.062632			0.062632	3.669368	103.9	3.732	3.485194	3.621116
2	5/1/2012	20	H	E	11.287311	0.011683			0.011683	2.487317	70.3	2.499	4.251784	2.989004
3	5/1/2012	20	H	U	5.611155	0			0	1.741	36.84	1.741	5.935689	2.186708
4	5/1/2012	20	L	U	11.339868	0.040141			0.040141	3.116859	80.29	3.157	4.732101	3.799404
5	5/1/2012	20	L	S	12.653793	0.064468			0.064468	3.586532	71.49	3.651	4.838489	3.459036
6	5/1/2012	20	L	E	7.503207	0.0151255			0.0151255	1.953874	59.59	1.969	4.227172	2.518972
7	5/1/2012	20	L	S	5.033028	0			0	1.539	34.64	1.539	5.025947	1.740988
8	5/1/2012	20	H	U	10.919412	0.0266005			0.0266005	2.6874	77.64	2.714	4.319531	3.353684
9	5/1/2012	20	L	U	8.712018	0.042895			0.042895	2.368105	65.32	2.411	3.645444	2.381204
10	5/1/2012	20	H	E	6.504624	0.0467965			0.0467965	2.305204	55.17	2.352	3.684488	2.032732
11	5/1/2012	20	L	E	13.337034	0.060337			0.060337	3.424663	109	3.485	3.485692	3.799404
12	5/1/2012	20	H	S	11.707767	0.0059455			0.0059455	2.226055	67.24	2.232	4.553748	3.06194
13	5/1/2012	20	L	E	12.18078	0.036469			0.036469	2.913531	83.03	2.95	3.970801	3.296956
14	5/1/2012	20	L	U	15.491871	0.0275185			0.0275185	2.832482	97.22	2.86	3.82469	3.718364
15	5/1/2012	20	H	U	12.443565	0.059419			0.059419	3.169581	91.82	3.229	3.661281	3.361788
16	5/1/2012	20	H	E	10.551513	0.013519			0.013519	2.494481	74.33	2.508	4.435566	3.296956
17	5/1/2012	20	H	S	11.65521	0.029584			0.029584					2.89986
18	5/1/2012	20	L	S	8.396676	0.0339445			0.0339445	2.392056	53.64	2.426	5.451476	2.924172
19	5/1/2012	20	H	U	12.233337	0.032797			0.032797	2.815203	80.06	2.848	4.725451	3.783196
20	5/1/2012	20	H	E	8.869689	0.0275185			0.0275185	2.229481	66.7	2.257	4.542015	3.029524
21	5/1/2012	20	H	S	12.233337	0.019027			0.019027	2.600973	69.58	2.62	4.621897	3.215916
22	5/1/2012	20	L	E	19.170861	0.055747			0.055747	3.869253	130.4	3.925	3.665635	4.779988
23	5/1/2012	20	L	S	15.491871	0.118171			0.118171	4.532829	105.5	4.651	3.793369	4.002004
24	5/1/2012	20	L	U	12.811464	0.016732			0.016732	2.546268	81.17	2.563	4.261471	3.459036
1	5/1/2012	40	H	S	13.00497	0.0951832			0.0951832	3.425817	101.6	3.521	3.412539	3.46714
2	5/1/2012	40	H	E	11.93367	0.0147528			0.0147528	2.581247	75.68	2.596	4.292193	3.248332
3	5/1/2012	40	H	U	7.00569	0			0	1.693	41.24	1.693	5.813317	2.397412
4	5/1/2012	40	L	U	11.665845	0.0602906			0.0602906	2.910709	78.21	2.971	4.712886	3.685948
5	5/1/2012	40	L	S	17.61156	0.1608286			0.1608286	3.742171	96.77	3.903	3.725233	3.604908
6	5/1/2012	40	L	E	6.630735	0.0126829			0.0126829	1.998317	59.93	2.011	4.243758	2.543284
7	5/1/2012	40	L	S	5.238045	0			0	1.56	37.35	1.56	5.051834	1.88686
8	5/1/2012	40	H	U	10.86237	0.025398			0.025398	2.532602	73.16	2.558	4.417884	3.232124
9	5/1/2012	40	L	U	8.29125	0.0543766			0.0543766	2.452623	69.36	2.507	3.585	2.486556
10	5/1/2012	40	H	E	8.987595	0.0919305			0.0919305	2.746069	66.06	2.838	3.960369	2.61622
11	5/1/2012	40	L	E	13.165665	0.0555594			0.0555594	2.970441	95.96	3.026	3.477987	3.337476
12	5/1/2012	40	H	S	11.237325	0.0023334			0.0023334	2.241667	66.72	2.244	4.771433	3.1835
13	5/1/2012	40	L	E	12.14793	0.04314			0.04314	2.72486	79.09	2.768	4.137873	3.272644
14	5/1/2012	40	L	U	16.165305	0.0345647			0.0345647	2.928435	100.7	2.963	3.716659	3.742676
15	5/1/2012	40	H	U	12.46932	0.0922262			0.0922262	3.311774	96.78	3.404	3.574123	3.459036
16	5/1/2012	40	H	E	11.71941	0.0339733			0.0339733	2.742027	79.08	2.776	4.394593	3.475244
17	5/1/2012	40	H	S	12.0408	0.0768498			0.0768498	2.92415	77.74	3.001	3.990816	3.10246
18	5/1/2012	40	L	S	5.880825	0.0437314			0.0437314	2.287269	51.73	2.331	5.088784	2.632428
19	5/1/2012	40	H	U	10.594545	0.0289464			0.0289464	2.735054	78.23	2.764	4.566652	3.572492
20	5/1/2012	40	H	E	10.43385	0.0357475			0.0357475	2.507252	71.89	2.543	4.383202	3.151084
21	5/1/2012	40	H	S	12.14793	0.0129786			0.0129786	2.693021	67.83	2.706	4.765036	3.232124
22	5/1/2012	40	L	E	20.39694	0.0650218			0.0650218	3.840978	127	3.906	3.636148	4.617908
23	5/1/2012	40	L	S	14.50479	0.152549			0.152549	4.267451	99.3	4.42	3.752737	3.726468
24	5/1/2012	40	L	U	13.64775	0.0188926			0.0188926	2.732107	82.12	2.751	4.222041	3.46714
1	5/1/2012	70	H	S	13.130904	0.1005176			0.1005176	3.615482	104.7	3.716	3.443083	3.604908
2	5/1/2012	70	H	E	13.130904	0.0407498			0.0407498	2.81525	83.14	2.856	4.296959	3.572492
3	5/1/2012	70	H	U	8.575392	0.0023076			0.0023076	1.844692	53.83	1.847	5.07092	2.729676
4	5/1/2012	70	L	U	12.739032	0.1148282			0.1148282	2.830172	73.47	2.945	3.505785	2.5757
5	5/1/2012	70	L	S	19.743744	0.1456942			0.1456942	3.931306	110.5	4.077	3.526382	3.896652
6	5/1/2012	70	L	E	7.69368	0.0267198			0.0267198	2.02928	63.2	2.056	4.242171	2.681052
7	5/1/2012	70	L	S	5.783304	0			0	1.464	40.58	1.464	4.729611	1.919276
8	5/1/2012	70	H	U	10.3878	0.039908			0.039908	2.398092	71.83	2.438	4.093526	2.94038
9	5/1/2012	70	L	U	9.40812	0.0544992			0.0544992	2.531501	75.74	2.586	3.743105	2.835028
10	5/1/2012	70	H	E	11.465448	0.1027624			0.1027624	3.238238	81.83	3.341	3.949803	3.232124
11	5/1/2012	70	L	E	12.151224	0.046923			0.046923	2.707077	87.57	2.754	3.450291	3.02142
12	5/1/2012	70	H	S	11.465448	0.0087614			0.0087614	2.002239	65.13	2.011	4.01692	2.61622
13	5/1/2012	70	L	E	12.10224	0.0702128			0.0702128	3.078787	91.51	3.149	4.04563	3.702156
14	5/1/2012	70	L	U	10.534752	0.04552			0.04552	2.34248	70.56	2.388	3.271355	2.308268
15	5/1/2012	70	H	U	11.12256	0.0845234			0.0845234	2.573477	74.5	2.658	3.58785	2.672948
16	5/1/2012	70	H	E	15.188232	0.0631978			0.0631978	3.077802	87.99	3.141	3.93117	3.459036
17	5/1/2012	70	H	S										
18	5/1/2012	70	L	S	10.044912	0.0718964			0.0718964	2.518104	64.46	2.59	4.762712	3.070044
19	5/1/2012	70	H	U	12.641064	0.0654426			0.0654426	3.085557	85.41	3.151	4.078384	3.483348
20	5/1/2012	70	H	E	10.828656	0.065162			0.065162	2.911838	88.82	2.977	4.660856	4.139772
21	5/1/2012	70	H	S	10.14288	0.0295258			0.0295258	2.670474	74.04	2.7	4.409157	3.26454
22	5/1/2012	70	L	E	18.127272	0.0968698			0.0968698	4.25913	135	4.356	2.940436	3.969588
23	5/1/2012	70	L	S	12.053256	0.1630914			0.1630914	4.066909	98.11	4.23	3.864336	3.7913
24	5/1/2012	70	L	U	11.220528	0.044117			0.044117	2.627883	84.87	2.672	4.027944	3.418516

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	5/1/2012	20	H	S	0.577	0.136	0.027	0	1.9931	0	0	0	0.0324	0	27.2455	11.634	1.2576	0.1795
2	5/1/2012	20	H	E	0.424	0.096	0.017	0.0345	1.4878	0	0	0	0	0	1.6818	0.4783	0.4174	0.1883
3	5/1/2012	20	H	U	0.257	0.069	0.013	0	1.213	0	0	0	0	0	8.0318	2.2296	0.3974	0.1248
4	5/1/2012	20	L	U	0.581	0.145	0.026	0	0.8743	0	0	0	0.0251	0	13.1929	4.9594	0.6934	0.2381
5	5/1/2012	20	L	S	0.491	0.116	0.02	0.0425	1.3983	0	0	0	0.1837	0	0.0806	0	0.4069	0.2184
6	5/1/2012	20	L	E	0.301	0.072	0.013	0	0.8955	0	0	0	0.1784	0	21.9637	6.7681	0.922	0.1796
7	5/1/2012	20	L	S	0.195	0.053	0.011	0	0.6632	0	0	0	0.1719	0	10.2813	3.3738	0.4952	0.1049
8	5/1/2012	20	H	U	0.531	0.13	0.024	0	0.8508	0	0	0	0.1698	0	9.2216	3.7178	0.6188	0.2067
9	5/1/2012	20	L	U	0.318	0.071	0.013	0	0.8197	0	0	0	0.1636	0	24.0009	7.3426	1.2908	0.1547
10	5/1/2012	20	H	E	0.224	0.046	0.007	0	0.869	0	0	0	0.1503	0	19.3663	9.3726	1.1767	0.1149
11	5/1/2012	20	L	E	0.604	0.142	0.027	0	1.6008	0	0	0	0.1778	0	31.0467	11.2958	1.4848	0.271
12	5/1/2012	20	H	S	0.424	0.095	0.016	0.035	1.3685	0	0	0	0.1657	0	0	0	0.3065	0.2088
13	5/1/2012	20	L	E	0.458	0.102	0.018	0	0.9216	0	0	0	0.1481	0	15.9041	6.0956	0.8799	0.2033
14	5/1/2012	20	L	U	0.573	0.129	0.024	0	0.9735	0	0	0	0.1225	0	18.0397	7.1062	1.0297	0.2237
15	5/1/2012	20	H	U	0.476	0.113	0.023	0	0.8778	0	0	0	0.112	0	27.5159	10.2248	1.3587	0.2231
16	5/1/2012	20	H	E	0.512	0.118	0.021	0.0368	1.5003	0	0	0	0.1042	0	0	0	0.4148	0.2102
17	5/1/2012	20	H	S	0.441	0.11	0.029	0	1.1668	0	0	0	0.1009	0.2583	9.4788	4.2227	0.5246	0.1375
18	5/1/2012	20	L	S	0.384	0.094	0.016	0.0324	0.592	0	0	0	0.1044	0	3.9584	1.0839	0.3829	0.1095
19	5/1/2012	20	H	U	0.573	0.137	0.025	0.027	1.0696	0	0	0	0.1179	0	4.5804	0.4544	0.4811	0.1569
20	5/1/2012	20	H	E	0.415	0.101	0.019	0	1.0334	0	0	0	0.1154	0	16.7434	5.0926	0.74	0.0974
21	5/1/2012	20	H	S	0.459	0.106	0.018	0.0537	1.3678	0	0	0	0.4845	0	0.2327	0	0.3093	0.0628
22	5/1/2012	20	L	E	0.901	0.221	0.045	0	1.3384	0	0	0	0.1086	0	20.4794	6.4641	1.0046	0.3574
23	5/1/2012	20	L	S	0.643	0.142	0.025	0	1.3185	0	0	0	0.1354	0.3315	12.4054	7.6832	0.9638	0.1807
24	5/1/2012	20	L	U	0.57	0.134	0.025	0	0	0	0	0	0.0741	0	0.5512	0	0.0335	0.0111
1	5/1/2012	40	H	S	0.554	0.13	0.025	0	1.5706	0	0	0	0.0033	0	27.7118	10.9801	1.2953	0.2502
2	5/1/2012	40	H	E	0.46	0.102	0.018	0	1.4688	0	0	0	0	0	1.8196	0.5447	0.4518	0.2297
3	5/1/2012	40	H	U	0.292	0.072	0.013	0	0.6254	0	0	0	0	0	7.0709	1.6786	0.4878	0.1502
4	5/1/2012	40	L	U	0.563	0.14	0.026	0	0.7636	0	0	0	0	0	14.3185	5.0432	0.7374	0.2598
5	5/1/2012	40	L	S	0.579	0.11	0.017	0.0392	1.7823	0	0	0	0.0138	0	0.0138	0	0.4312	0.2288
6	5/1/2012	40	L	E	0.317	0.074	0.013	0	0.9176	0	0	0	0	0	20.7067	5.2093	0.9306	0.1525
7	5/1/2012	40	L	S	0.212	0.056	0.012	0	0.6004	0	0	0	0	0	8.8419	2.9049	0.5024	0.1253
8	5/1/2012	40	H	U	0.506	0.124	0.023	0	0.722	0	0	0	0	0	8.8176	3.2688	0.7703	0.1569
9	5/1/2012	40	L	U	0.344	0.075	0.013	0	0.9409	0	0	0	0	0	22.6224	5.216	1.0378	0.0883
10	5/1/2012	40	H	E	0.335	0.072	0.011	0	1.0884	0	0	0	0	0	17.573	8.512	1.0095	0.0912
11	5/1/2012	40	L	E	0.496	0.111	0.021	0	1.0713	0	0	0	0.0015	0	28.5334	8.8796	1.2523	0.2256
12	5/1/2012	40	H	S	0.43	0.097	0.018	0.0291	1.0969	0	0	0	0	0	0	0	0.3279	0.2038
13	5/1/2012	40	L	E	0.47	0.105	0.017	0	0.7987	0	0	0	0	0	15.4795	5.5688	0.7445	0.1603
14	5/1/2012	40	L	U	0.612	0.135	0.024	0	0.8789	0	0	0	0	0	14.6253	5.6485	0.9805	0
15	5/1/2012	40	H	U	0.523	0.119	0.023	0	0	0	0	0	0	0	1.2928	0.2162	0	0
16	5/1/2012	40	H	E	0.579	0.133	0.023	0	1.261	0	0	0	0	0	0.0349	0	0.4328	0
17	5/1/2012	40	H	S	0.472	0.102	0.018	0	1.1714	0	0	0	0	0.2811	10.4408	4.588	0.7039	0
18	5/1/2012	40	L	S	0.354	0.084	0.014	0	0.6478	0	0	0	0	0	3.3318	0.7398	0.363	0
19	5/1/2012	40	H	U	0.542	0.128	0.023	0	1.0692	0	0	0	0	0	4.0065	0.3869	0.3644	0
20	5/1/2012	40	H	E	0.45	0.108	0.02	0	0.8746	0	0	0	0	0	16.1225	4.3777	0.84	0
21	5/1/2012	40	H	S	0.428	0.099	0.018	0.0497	1.3344	0	0	0	0	0	0.2281	0	0.4799	0
22	5/1/2012	40	L	E	0.864	0.209	0.042	0	1.3232	0	0	0	0	0	20.0777	5.1514	1.0199	0.107
23	5/1/2012	40	L	S	0.59	0.132	0.023	0	1.3126	0	0	0	0	0.2841	13.3692	7.6603	1.0086	0
24	5/1/2012	40	L	U	0.573	0.134	0.024	0	1.3219	0	0	0	0	0	8.0742	1.4625	0.6767	0
1	5/1/2012	70	H	S	0.591	0.13	0.023	0	1.7278	0	0	0	0.0579	0	18.9391	7.9092	1.0845	0.191
2	5/1/2012	70	H	E	0.543	0.119	0.019	0.002	1.296	0	0	0	0.0443	0	1.7489	0.523	0.4776	0.1828
3	5/1/2012	70	H	U	0.355	0.081	0.013	0	0.8926	0	0	0	0.1237	0	5.6454	1.4275	0.3881	0.241
4	5/1/2012	70	L	U	0.351	0.057	0.008	0.0208	0.9091	0	0	0	0.113	0	1.6357	0.4208	0.2939	0.0924
5	5/1/2012	70	L	S	0.655	0.118	0.016	0.0177	1.6124	0	0	0	0.1507	0	0.0766	0	0.2979	0.1736
6	5/1/2012	70	L	E	0.344	0.077	0.013	0	0.9042	0	0	0	0.1472	0	17.2197	5.5227	0.8314	0.281
7	5/1/2012	70	L	S	0.205	0.044	0.008	0	1.1011	0	0	0	0.1191	0	7.1861	2.4432	0.2932	0.1727
8	5/1/2012	70	H	U	0.474	0.109	0.018	0	0.8193	0	0	0	0.0828	0	7.0911	2.9726	0.5984	0.2431
9	5/1/2012	70	L	U	0.421	0.094	0.016	0	0.938	0	0	0	0.1647	0	18.451	5.4749	0.9929	0.1558
10	5/1/2012	70	H	E	0.454	0.094	0.013	0	1.0095	0	0	0	0.0485	0	12.5837	7.0021	0.8854	0.2609
11	5/1/2012	70	L	E	0.412	0.076	0.011	0	1.2351	0	0	0	0.1373	0	14.564	5.1935	0.7646	0.2569
12	5/1/2012	70	H	S	0.369	0.073	0.011	0.0585	1.1332	0	0	0	0.1204	0	0.4022	0	0.3201	0.412
13	5/1/2012	70	L	E	0.54	0.119	0.02	0	1.0853	0	0	0	0.0494	0	14.5378	5.7046	0.8535	0.223
14	5/1/2012	70	L	U	0.223	0.025	0.003	0.0381	1.2144	0	0	0	0.1063	0	0.0131	0	0.3217	0.0421
15	5/1/2012	70	H	U	0.318	0.039	0.004	0.0029	1.042	0	0	0	0.0594	0	0	0	0.2911	0.1972
16	5/1/2012	70	H	E	0.606	0.137	0.024	0.0027	1.3545	0	0	0	0.0524	0	0	0	0.3494	0.2553
17	5/1/2012	70	H	S														
18	5/1/2012	70	L	S	0.428	0.09	0.013	0.0015	0.9334	0	0	0	0.0201	0	2.8361	0.7746	0.3771	0.1732
19	5/1/2012	70	H	U	0.59	0.131	0.021	0.002	1.3915	0	0	0	0.0384	0	3.3803	0.302	0.3228	0.1317
20	5/1/2012	70	H	E	0.586	0.133	0.024	0.0008	0.9891	0	0	0	0.0072	0	12.9325	4.0645	0.8196	0.1832
21	5/1/2012	70	H	S	0.462	0.103	0.018	0.0159	1.4563	0	0	0	0.0259	0	0.4903	0	0.4148	0.1371
22	5/1/2012	70	L	E	0.93	0.217	0.041	0	1.5399	0	0	0	0.0682	0	15.9226	5.0632	0.9426	0.4349
23	5/1/2012	70	L	S	0.581	0.119	0.019	0	1.9552	0	0	0	0.0348	0.2954	9.1779	5.312	0.7593	0.2637
24	5/1/2012	70	L	U	0.569	0.124	0.021	0	0	0	0	0	0	0	0	0	0	0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	5/20/2012	20	H	S	13.949355	0.9594038	5.075346	4.245808	0.9594038					3.475244
2	5/20/2012	20	H	E	11.597334	0.1421311	3.271295	2.560888	0.1421311					3.053836
3	5/20/2012	20	H	U	7.493808	0.0248543	1.937866	0.960214	0.0248543					2.29206
4	5/20/2012	20	L	U	14.599914	0.915425	7.271582	5.930728	0.915425					4.131668
5	5/20/2012	20	L	S	17.452365	1.5347931	4.683161	3.319102	1.5347931					3.815612
6	5/20/2012	20	L	E	5.892432	0.1054821	2.643799	2.30815	0.1054821					1.7653
7	5/20/2012	20	L	S	5.392002	0.0101947	1.780992	1.88692	0.0101947					1.84634
8	5/20/2012	20	H	U	13.098624	0.4939615	5.075346	4.751284	0.4939615					3.288852
9	5/20/2012	20	L	U	6.993378	0.3986741	2.486925	2.30815	0.3986741					2.000316
10	5/20/2012	20	H	E	6.392862	0.6295628	2.800673	1.971166	0.6295628					1.822028
11	5/20/2012	20	L	E	13.849269	0.5819191	5.23222	4.4143	0.5819191					3.329372
12	5/20/2012	20	H	S	8.394582	0.0615033	2.722236	2.392396	0.0615033					2.45414
13	5/20/2012	20	L	E	9.795786	0.2007695	3.389535	2.813626	0.2007695					2.61622
14	5/20/2012	20	L	U	11.297076	0.2410834	3.877341	3.234856	0.2410834					3.094356
15	5/20/2012	20	H	U	9.445485	0.6808714	3.714739	3.234856	0.6808714					2.65674
16	5/20/2012	20	H	E	11.997678	0.2264238	4.283846	3.487594	0.2264238					3.02142
17	5/20/2012	20	H	S	13.649097	0.4499827	5.015555	5.088268	0.4499827					3.151084
18	5/20/2012	20	L	S	8.144367	0.3437006	3.064331	2.476642	0.3437006					2.462244
19	5/20/2012	20	H	U	10.946775	0.36569	4.365147	3.824578	0.36569					2.664844
20	5/20/2012	20	H	E	8.094324	0.2374185	3.308234	2.392396	0.2374185					2.624324
21	5/20/2012	20	H	S	10.846689	0.1971046	3.308234	2.560888	0.1971046					2.907964
22	5/20/2012	20	L	E	19.103784	0.6295628	8.511498	6.94168	0.6295628					3.87234
23	5/20/2012	20	L	S	13.849269	1.3002395	3.79604	3.487594	1.3002395					3.637324
24	5/20/2012	20	L	U	14.900172	0.2044344	4.771652	4.330054	0.2044344					3.215916
1	5/20/2012	40	H	S	17.352279	1.0507717	5.225	5.25676	1.0507717	1.205228	73.16	2.256	4.617272	3.377996
2	5/20/2012	40	H	E	15.650817	0.3515868	3.465	3.15061	0.3515868					3.159188
3	5/20/2012	40	H	U	9.245313	0.0773209	1.865	0.875968	0.0773209					2.178604
4	5/20/2012	40	L	U	15.000258	0.8692154	6.345	5.425252	0.8692154					3.450932
5	5/20/2012	40	L	S	21.605934	1.9933193	4.345	4.245808	1.9933193		74.16	1.519		
6	5/20/2012	40	L	E	8.494668	0.1932079	2.745	2.645134	0.1932079	1.065792	40.34	1.259	4.4765	1.80582
7	5/20/2012	40	L	S	7.944195	0.0425548	1.865	1.549936	0.0425548	1.201445	36.3	1.244	5.019361	1.822028
8	5/20/2012	40	H	U	14.7	0.4829254	5.145	4.330054	0.4829254	1.561075	73.73	2.044	4.01002	2.956588
9	5/20/2012	40	L	U	9.795786	0.4751996	2.505	2.139658	0.4751996	1.1718	54.44	1.647	3.912528	2.12998
10	5/20/2012	40	H	E	10.346259	0.7842316	2.425	2.392396	0.7842316	1.150768	51.54	1.935	4.101226	2.113772
11	5/20/2012	40	L	E	15.850989	0.5176915	4.825	4.161562	0.5176915					2.956588
12	5/20/2012	40	H	S	11.247033	0.1082241	0.505	2.392396	0.1082241					2.5757
13	5/20/2012	40	L	E	11.897592	0.3631755	3.35124	2.897872	0.3631755	1.324825	60.08	1.688	4.165719	2.502764
14	5/20/2012	40	L	U	13.048581	0.3863529	4.24026	3.656086	0.3863529					2.948484
15	5/20/2012	40	H	U	12.047721	0.76878	3.91698	3.234856	0.76878	1.33722	61.9	2.106	4.357448	2.69726
16	5/20/2012	40	H	E	16.051161	0.4674738	4.806	3.908824	0.4674738	1.774526	78.26	2.242	4.306021	3.369892
17	5/20/2012	40	H	S	15.300516	0.7456026	4.64436	3.99307	0.7456026	1.670397	84.24	2.416	3.557821	2.997108
18	5/20/2012	40	L	S	9.745743	0.4867883	3.27042	2.645134	0.4867883	1.183212	47.98	1.67	5.300717	2.543284
19	5/20/2012	40	H	U	11.497248	0.459748	4.15944	3.403348	0.459748	1.352252	59.95	1.812	4.391039	2.632428
20	5/20/2012	40	H	E	10.19613	0.3902158	3.51288	2.72938	0.3902158	1.278784	49.03	1.669	5.154142	2.527076
21	5/20/2012	40	H	S	14.099484	0.3940787	3.5937	2.982118	0.3940787	1.680921	59.58	2.075	4.771957	2.843132
22	5/20/2012	40	L	E	18.653397	0.9541992	9.57438	7.615648	0.9541992					4.107356
23	5/20/2012	40	L	S	17.102064	2.1285208	4.4019	3.740332	2.1285208	1.613479	88.7	3.742	4.091567	3.62922
24	5/20/2012	40	L	U	16.851849	0.38249	5.37174	4.245808	0.38249					3.175396
1	5/20/2012	70	H	S	16.901892	1.1060235	5.118368	3.824578	1.1060235	2.053977	105.5	3.16	3.424656	3.613012
2	5/20/2012	70	H	E	17.602494	0.5587866	4.22101	3.234856	0.5756866	2.015313	86.82	2.591	4.1895	3.637324
3	5/20/2012	70	H	U	10.296216	0.156735	2.18156	1.04446	0.156735	1.343265	50.97	1.5	5.466753	2.786404
4	5/20/2012	70	L	U	13.549011	1.3405536	2.099982	1.297198	1.3405536	1.229446	78.91	2.57	3.633816	2.867444
5	5/20/2012	70	L	S	24.658557	2.3233464	4.302588	3.319102	2.3233464					3.920964
6	5/20/2012	70	L	E	8.144367	0.3503154	3.160496	2.560888	0.3503154	1.174685	50.35	1.525	4.890256	2.462244
7	5/20/2012	70	L	S	6.893292	0.0041043	1.692092	1.212952	0.0353043	1.023696	36.11	1.059	4.978444	1.797716
8	5/20/2012	70	H	U	14.850129	0.6109044	0.631578	3.824578	0.6109044	1.610096	70.73	2.221	4.3978	3.110564
9	5/20/2012	70	L	U	10.496388	0.6109044	3.242074	2.30815	0.6109044	1.420096	62	2.031	4.376561	2.713468
10	5/20/2012	70	H	E	15.050301	1.6309242	3.568386	2.813626	1.6676242	1.487376	80.57	3.155	4.102098	3.30506
11	5/20/2012	70	L	E	15.250473	0.8491572	3.976276	3.066364	0.8807572	1.469243	77.19	2.35	3.966757	3.06194
12	5/20/2012	70	H	S	12.398022	0.2014074	2.915762	2.560888	0.2014074	1.476593	61.47	1.678	4.440664	2.729676
13	5/20/2012	70	L	E	13.148667	0.9273339	3.562132	2.139658	0.9273339	1.525666	72.94	2.453	4.275662	3.118668
14	5/20/2012	70	L	U	11.597334	0.9049977	2.049979	1.549936	0.9049977	1.222002	69.55	2.127	3.42373	2.381204
15	5/20/2012	70	H	U	11.19699	1.0799646	1.890805	1.802674	1.0799646	1.397035	74.66	2.477	3.688706	2.753988
16	5/20/2012	70	H	E	15.450645	1.0762419	4.517176	2.897872	1.0762419	2.021758	85.21	3.098	4.354254	3.71026
17	5/20/2012	70	H	S										
18	5/20/2012	70	L	S	11.19699	0.864048	3.402958	1.971166	0.864048	1.452952	63.79	2.317	4.927073	3.14298
19	5/20/2012	70	H	U	14.750043	1.0166787	4.198828	2.72938	1.0166787	1.709321	75.11	2.726	4.583715	3.442828
20	5/20/2012	70	H	E	15.450645	1.1432505	5.313046	3.487594	1.1432505	1.80875	87.85	2.952	4.251078	3.734572
21	5/20/2012	70	H	S	12.748323	0.380097	3.402958	2.476642	0.380097	1.831903	66.84	2.212	4.726493	3.159188
22	5/20/2012	70	L	E	19.854429	1.3256628	8.576113	6.014974	1.3256628	2.422337	116.7	3.748	3.741803	4.366684
23	5/20/2012	70	L	S	14.750043	1.4782935	3.641719	1.802674	1.4782935	2.318706	87.37	3.797	4.1353	3.613012
24	5/20/2012	70	L	U	15.400602	0.6444087	4.198828	2.645134	0.6444087					3.46714

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	5/20/2012	20	H	S	0.541	0.126	0.025	0	1.4586	0	0	0	0	0	27.169	7.8576	1.2654	0.2847
2	5/20/2012	20	H	E	0.409	0.087	0.015	0.0011	3.5024	0	0	0	0	0	1.7777	0.3773	0.4578	0.2395
3	5/20/2012	20	H	U	0.26	0.067	0.011	0	0.3569	0	0	0	0	0	8.3864	2.1494	0.2791	0.0675
4	5/20/2012	20	L	U	0.643	0.164	0.038	0	0.7041	0	0	0	0	0	19.4356	5.8832	0.8679	0.3518
5	5/20/2012	20	L	S	0.583	0.135	0.031	0.0408	1.3587	0	0	0	0	0	0	0	0.3818	0.2381
6	5/20/2012	20	L	E	0.195	0.053	0.018	0	0.5626	0	0	0	0	0	10.7515	2.4342	0.4883	0.1991
7	5/20/2012	20	L	S	0.186	0.046	0.008	0	0.4977	0	0	0	0.0065	0	4.1166	0.8259	0.2592	0.1471
8	5/20/2012	20	H	U	0.518	0.124	0.023	0	0.7064	0	0	0	0	0	8.0748	3.1963	0.6599	0.3187
9	5/20/2012	20	L	U	0.258	0.056	0.01	0	0.7327	0	0	0	0	0	12.122	2.3703	0.6394	0.2135
10	5/20/2012	20	H	E	0.199	0.041	0.007	0	0.6336	0	0	0	0	0	9.1315	2.7139	0.6798	0.1682
11	5/20/2012	20	L	E	0.481	0.118	0.019	0	0.7625	0	0	0	0	0	12.9121	3.7182	0.6132	0.3675
12	5/20/2012	20	H	S	0.295	0.065	0.01	0	0.7304	0	0	0	0	0	0	0	0.3236	0.1547
13	5/20/2012	20	L	E	0.31	0.075	0.011	0	0.6346	0	0	0	0.0609	0	14.0065	4.5313	0.6846	0.2756
14	5/20/2012	20	L	U	0.429	0.111	0.02	0.0163	0.6749	0	0	0	0	0	3.8889	1.169	0.4199	0.1026
15	5/20/2012	20	H	U	0.297	0.067	0.013	0	0.5291	0	0	0	0	0	13.9723	5.2388	0.8531	0.2853
16	5/20/2012	20	H	E	0.469	0.109	0.022	0	0.9506	0	0	0	0	0	0	0	0	0.1991
17	5/20/2012	20	H	S	0.502	0.116	0.024	0	1.1493	0	0	0	0	0	11.3896	5.2596	0.7722	0.3539
18	5/20/2012	20	L	S	0.292	0.07	0.013	0	0.6432	0	0	0	0	0	0	0	0	0.147
19	5/20/2012	20	H	U	0.358	0.082	0.015	0	0.6865	0	0	0	0	0	6.5496	1.5868	0.2237	0.1244
20	5/20/2012	20	H	E	0.289	0.071	0.014	0	0.8227	0	0	0	0	0	8.5196	1.5434	0.4083	0.1089
21	5/20/2012	20	H	S	0.355	0.08	0.013	0.0103	0.951	0	0	0	0	0	0.2807	0.0747	0.0648	0.1087
22	5/20/2012	20	L	E	0.68	0.162	0.033	0	0.9204	0	0	0	0	0	17.6028	4.3734	0.8834	0.5124
23	5/20/2012	20	L	S	0.529	0.12	0.022	0	0.9264	0	0	0	0	0	0	0	0.0503	0.1416
24	5/20/2012	20	L	U	0.478	0.109	0.024	0	1.1309	0	0	0	0	0	7.0606	1.1431	0.2462	0.1349
1	5/20/2012	40	H	S	0.548	0.129	0.025	0	1.4521	0	0	0	0.1443	0	27.24	7.5869	1.3289	0.2073
2	5/20/2012	40	H	E	0.47	0.101	0.015	0.0331	1.0867	0	0	0	0.1359	0	2.6203	0.7524	0.46	0.1758
3	5/20/2012	40	H	U	0.278	0.07	0.012	0	0.537	0	0	0	0.1337	0	9.1986	2.6422	0.436	0.1176
4	5/20/2012	40	L	U	0.527	0.134	0.03	0	0.679	0	0	0	0.1305	0	19.3984	5.7273	0.7642	0.234
5	5/20/2012	40	L	S				0.0376	1.5904	0	0	0	0.1375	0	0	0	0	0.2285
6	5/20/2012	40	L	E	0.221	0.05	0.008	0.0285	0.4755	0	0	0	0.1292	0	10.649	2.2593	0.5869	0.1793
7	5/20/2012	40	L	S	0.215	0.055	0.008	0	0.6029	0	0	0	0.1576	0	6.1383	1.4706	0.3417	0.166
8	5/20/2012	40	H	U	0.463	0.114	0.024	0.0402	0.7315	0	0	0	0.129	0	9.7193	3.4665	0.7448	0.2392
9	5/20/2012	40	L	U	0.287	0.062	0.012	0.0304	0.6679	0	0	0	0.1284	0	11.7991	2.3505	0.6026	0.1954
10	5/20/2012	40	H	E	0.25	0.05	0.006	0.0318	0.7277	0	0	0	0.1296	0	15.3907	6.4563	0.9304	0.1502
11	5/20/2012	40	L	E	0.402	0.089	0.016	0.0311	0.6578	0	0	0	0.1331	0	12.2098	3.5303	0.7469	0.2799
12	5/20/2012	40	H	S	0.336	0.077	0.017	0.0397	0.7745	0	0	0	0.1815	0	0.2151	0.0057	0.3196	0.2157
13	5/20/2012	40	L	E	0.315	0.068	0.01	0.0241	0.6066	0	0	0	0.1317	0	12.891	4.1491	0.6417	0.2371
14	5/20/2012	40	L	U	0.428	0.091	0.015	0.0296	0.6966	0	0	0	0.1277	0	4.1025	1.2917	0.454	0.2064
15	5/20/2012	40	H	U	0.352	0.08	0.017	0.0295	0.5447	0	0	0	0.1257	0	12.0771	4.5763	0.6747	0.2427
16	5/20/2012	40	H	E	0.565	0.126	0.021	0.0554	1.0326	0	0	0	0.1207	0	0.1391	0	0.3581	0.2796
17	5/20/2012	40	H	S	0.466	0.098	0.017	0	1.2099	0	0	0	0.1275	0.2365	9.7555	4.9764	0.739	0.2921
18	5/20/2012	40	L	S	0.334	0.078	0.013	0.0324	0.4078	0	0	0	0.1187	0	3.6236	1.3898	0.4207	0.1954
19	5/20/2012	40	H	U	0.35	0.078	0.013	0.0313	0.7829	0	0	0	0.1273	0	6.4802	1.56	0.4589	0.263
20	5/20/2012	40	H	E	0.314	0.074	0.014	0.0305	0.5297	0	0	0	0.1212	0	8.0729	1.4837	0.4263	0.2128
21	5/20/2012	40	H	S	0.39	0.087	0.013	0.0334	1.0404	0	0	0	0.1219	0	0.5056	0.2337	0.3339	0.2015
22	5/20/2012	40	L	E	0.733	0.173	0.033	0.0294	1.0815	0	0	0	0.1279	0	16.7444	4.6966	0.8065	0.4181
23	5/20/2012	40	L	S	0.632	0.136	0.024	0.0418	1.1811	0	0	0	0.1259	0	2.166	0.3911	0.3684	0.2748
24	5/20/2012	40	L	U	0.525	0.118	0.021	0.0341	1.0149	0	0	0	0.1239	0	5.7131	0.899	0.4463	0.2919
1	5/20/2012	70	H	S	0.575	0.118	0.021	0	1.3145	0	0	0	0.0989	0	21.049	0	0.9805	0.1882
2	5/20/2012	70	H	E	0.568	0.115	0.018	0.0403	1.0958	0	0	0.0169	0.0932	0	2.6735	0.6809	0.525	0.2102
3	5/20/2012	70	H	U	0.345	0.076	0.015	0.0344	0.6023	0	0	0	0.0869	0	2.0605	0.9004	0.044	0.0444
4	5/20/2012	70	L	U	0.352	0.051	0.007	0.0352	0.8137	0	0	0	0.0991	0	1.8823	0.4415	0.2653	0.0725
5	5/20/2012	70	L	S	0.689	0.115	0.015	0.069	1.6699	0	0	0	0.0949	0	0	0	0.3043	0.1958
6	5/20/2012	70	L	E	0.276	0.056	0.009	0.0328	0.6771	0	0	0	0.095	0	12.3406	2.9042	0.4888	0.2066
7	5/20/2012	70	L	S	0.178	0.032	0.007	0.0325	0.7362	0	0	0.0312	0.1126	0	4.2724	1.1369	0.3183	0.1384
8	5/20/2012	70	H	U	0.477	0.102	0.018	0.0412	0.7561	0	0	0	0.1151	0	6.2418	2.4122	0.5381	0.3003
9	5/20/2012	70	L	U	0.38	0.077	0.013	0.0345	1.1675	0	0	0	0.1219	0	9.3879	1.7014	0.5217	0.288
10	5/20/2012	70	H	E	0.492	0.09	0.011	0.0399	0.862	0	0	0.0367	0.1227	0	8.4472	4.7362	0.7549	0.2779
11	5/20/2012	70	L	E	0.407	0.069	0.009	0.0369	0.9458	0	0	0.0316	0.1175	0	9.0474	2.886	0.5156	0.3202
12	5/20/2012	70	H	S	0.356	0.063	0.009	0.0384	1.1617	0	0	0	0.1297	0	0	0	0	0.3205
13	5/20/2012	70	L	E	0.451	0.091	0.014	0.0358	0.6251	0	0	0	0.1203	0	10.5638	3.4488	0.7109	0.3349
14	5/20/2012	70	L	U	0.24	0.026	0.003	0.0351	0.8406	0	0	0	0.0993	0.1705	0	0	0.2544	0.0639
15	5/20/2012	70	H	U	0.345	0.04	0.004	0.0544	1.4711	0	0	0	0.1047	0	0	0	0.2331	0.1464
16	5/20/2012	70	H	E	0.607	0.127	0.021	0.0416	1.0781	0	0	0	0.1085	0	0	0	0	0.3233
17	5/20/2012	70	H	S				0	2.4619	0	0	0	0.0861	0	0	0	0	0.0324
18	5/20/2012	70	L	S	0.429	0.083	0.012	0.0393	0.7675	0	0	0	0.1029	0	1.6587	0.6165	0.2283	0.0642
19	5/20/2012	70	H	U	0.507	0.103	0.016	0.0374	0.9834	0	0	0	0.1056	0	4.1609	1.0718	0.2843	0.0841
20	5/20/2012	70	H	E	0.622	0.126	0.021	0.0368	0.6949	0	0	0	0.1104	0	5.4448	0.8816	0.3162	0.1423
21	5/20/2012	70	H	S	0.434	0.089	0.016	0.0491	1.2193	0	0	0	0.1053	0	0.6114	0.2389	0.395	0.1725
22	5/20/2012	70	L	E	0.827	0.179	0.033	0.0348	1.2022	0	0	0	0.118	0	12.3104	3.5535	0.7863	0.5175
23	5/20/2012	70	L	S	0.573	0.108	0.016	0.0573	1.6574	0	0	0	0.1123	0	1.3384	0.4159	0.1921	0.1492
24	5/20/2012	70	L	U	0.551	0.107	0.016	0.0402	1.2249	0	0	0	0.1014	0	0	0	0.0169	0.2789

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	6/1/2012	20	H	S	14.074218	0.935756			0.935756	2.364244	97.2	3.3	3.708753	3.604908
2	6/1/2012	20	H	E	11.872206	0.0981432			0.0981432	2.221857	71.9	2.32	4.517847	3.248332
3	6/1/2012	20	H	U	6.917679	0.0295456			0.0295456	1.860454	54.4	1.89	5.479596	2.9809
4	6/1/2012	20	L	U	16.643232	0.7985608			0.7985608	2.511439	99.5	3.31	4.250167	4.228916
5	6/1/2012	20	L	S	17.132568	1.3473416			1.3473416	2.712658	91.1	4.06	4.286231	3.904756
6	6/1/2012	20	L	E	6.367176	0.141468			0.141468	1.628532	46.2	1.77	4.891004	2.259644
7	6/1/2012	20	L	S	6.244842	0.0403768			0.0403768	1.699623	45.3	1.74	4.755612	2.154292
8	6/1/2012	20	H	U	14.991723	0.2100656			0.2100656	2.209934	77.1	2.42	4.538983	3.499556
9	6/1/2012	20	L	U	7.957518	0.6902488			0.6902488	1.679751	67.5	2.37	3.707799	2.502764
10	6/1/2012	20	H	E	9.670194	0.8671584			0.8671584	1.772842	63.5	2.64	4.107269	2.608116
11	6/1/2012	20	L	E	13.279047	0.4339104			0.4616104	2.11839	77.9	2.58	4.232293	3.296956
12	6/1/2012	20	H	S	8.691522	0.1450784			0.1450784	1.884922	58.3	2.03	4.68212	2.729676
13	6/1/2012	20	L	E	11.99454	0.3292088			0.3292088	1.990791	83.1	2.32	3.791918	3.151084
14	6/1/2012	20	L	U	13.646049	0.177572			0.177572	1.972428	70.2	2.15	4.915858	3.450932
15	6/1/2012	20	H	U	11.505204	0.5422224			0.5422224	1.647778	58.4	2.19	4.826747	2.81882
16	6/1/2012	20	H	E	15.481059	0.34004			0.34004	2.34996	83.3	2.69	4.395722	3.661636
17	6/1/2012	20	H	S	14.930556	0.2353384			0.2353384	2.364662	83.9	2.6	3.987581	3.34558
18	6/1/2012	20	L	S	9.425526	0.1920136			0.1920136	1.897986	54	2.09	5.475163	2.956588
19	6/1/2012	20	H	U	14.074218	0.3653128			0.3653128	1.954687	75.5	2.32	4.517102	3.410412
20	6/1/2012	20	H	E	8.385687	0.1992344			0.1992344	1.760766	54.7	1.96	5.138421	2.810716
21	6/1/2012	20	H	S	9.54786	0.2028448			0.2028448	1.807155	58	2.01	5.111538	2.964692
22	6/1/2012	20	L	E	17.560737	0.4230792			0.4230792	2.326921	93.9	2.75	4.089376	3.839924
23	6/1/2012	20	L	S	18.661743	2.127188			2.127188	2.282812	98.2	4.41	4.199149	4.123564
24	6/1/2012	20	L	U	13.768383	0.213676			0.213676	2.106324	82.4	2.32	4.394558	3.621116

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	6/1/2012	20	H	S	0.578	0.14	0.027	0	1.2475	0	0	0	0.0696	0	20.3025	9.62	1.1435	0.1199
2	6/1/2012	20	H	E	0.453	0.102	0.019	0.0383	1.1756	0	0	0	0.074	0	0.6327	0.1228	0.4499	0.1446
3	6/1/2012	20	H	U	0.363	0.096	0.018	0.0274	0.5545	0	0	0	0.0677	0	12.5327	4.1765	0.6081	0.1205
4	6/1/2012	20	L	U	0.718	0.188	0.043	0.0224	0.8447	0	0	0	0.0794	0	17.8144	5.9069	0.7741	0.2133
5	6/1/2012	20	L	S	0.622	0.144	0.025	0.0697	1.4168	0	0	0	0.0767	0	0.0683	0	0.3739	0.22
6	6/1/2012	20	L	E	0.254	0.06	0.011	0.0199	0.8967	0	0	0	0.0965	0	8.3342	1.1603	0.4487	0.1929
7	6/1/2012	20	L	S	0.24	0.062	0.012	0.0144	0.6005	0	0	0	0.092	0	9.1465	3.2256	0.5301	0.1634
8	6/1/2012	20	H	U	0.554	0.138	0.026	0.0214	0.6725	0	0	0	0.0999	0	5.0018	2.5655	0.6765	0.2473
9	6/1/2012	20	L	U	0.344	0.076	0.014	0.0106	1.0304	0	0	0	0.0994	0	19.7578	5.788	1.0623	0.1919
10	6/1/2012	20	H	E	0.305	0.063	0.01	0.0212	1.375	0	0	0	0.1335	0	15.4171	6.7279	1.2438	0.1911
11	6/1/2012	20	L	E	0.445	0.103	0.021	0.0285	0.9892	0	0	0.0277	0.1118	0	5.4639	2.6099	0.5201	0.2899
12	6/1/2012	20	H	S	0.336	0.078	0.014	0.0268	1.2842	0	0	0	0.1057	0	5.848	3.158	0.5547	0.225
13	6/1/2012	20	L	E	0.422	0.093	0.016	0.0089	0.7546	0	0	0	0.1002	0	20.8364	8.2757	1.043	0.2406
14	6/1/2012	20	L	U	0.464	0.102	0.018	0.0543	0.7591	0	0	0	0.0937	0	1.0537	0.3309	0.375	0.2159
15	6/1/2012	20	H	U	0.328	0.074	0.014	0.0198	0.6263	0	0	0	0	0	10.3585	4.7205	0.6737	0.6678
16	6/1/2012	20	H	E	0.603	0.144	0.027	0.0167	1.084	0	0	0	0.0954	0	0.1017	0	0.3615	0.265
17	6/1/2012	20	H	S	0.531	0.125	0.024	0.0236	1.1975	0	0	0	0.0967	0	7.6908	3.6687	0.7426	0.2721
18	6/1/2012	20	L	S	0.372	0.092	0.017	0.0196	0.6061	0	0	0	0.0927	0	3.067	0.8362	0.4886	0.2139
19	6/1/2012	20	H	U	0.494	0.118	0.022	0.0187	0.8389	0	0	0	0.1016	0	9.8233	4.2318	0.6329	0.2465
20	6/1/2012	20	H	E	0.359	0.093	0.022	0.0216	0.8106	0	0	0	0.0948	0	6.1328	0.597	0.3783	0.1959
21	6/1/2012	20	H	S	0.385	0.088	0.014	0.1619	2.7437	0	0	0	0.1061	0	0.3705	0	0.3401	0.1645
22	6/1/2012	20	L	E	0.591	0.147	0.031	0.0207	1.2743	0	0	0	0.1152	0	14.9385	4.6847	1.0697	0.3462
23	6/1/2012	20	L	S	0.711	0.154	0.025	0.0233	1.3785	0	0	0	0.0935	0.21	2.8554	0.3475	0.4195	0.2758
24	6/1/2012	20	L	U	0.565	0.13	0.024	0.02	1.1302	0	0	0	0.1045	0	8.3651	1.8961	0.5192	0.2801

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	6/20/2012	20	H	S	13.653675	0.4891056	5.184032	4.505162	0.4891056	2.462894	89.76	2.952	4.137716	3.714014
2	6/20/2012	20	H	E	12.77055	0.0867616	4.182848	3.736794	0.0867616	2.167238	77.08	2.254	4.399035	3.390776
3	6/20/2012	20	H	U	8.237175	0.0232336	2.764504	1.143552	0.0232336	1.713766	52.24	1.737	5.892986	3.078496
4	6/20/2012	20	L	U	15.4788	0.857568	6.852672	8.347002	0.857568	2.478432	98.53	3.336	4.175329	4.113951
5	6/20/2012	20	L	S	18.7758	1.6495504	6.518944	7.098404	1.6495504	3.06645	102.8	4.716	3.868664	3.976986
6	6/20/2012	20	L	E	7.295175	0.0232336	3.765688	3.256564	0.0232336	1.489766	52.92	1.513	5.44457	2.881266
7	6/20/2012	20	L	S	6.353175	0.031704	3.181664	2.584242	0.031704	1.616296	51.1	1.648	5.499109	2.810045
8	6/20/2012	20	H	U	13.300425	0.1714656	6.185216	5.945852	0.1714656	2.137534	76.52	2.309	4.624541	3.538698
9	6/20/2012	20	L	U	8.06055	0.8194512	3.932552	3.256564	0.8194512	1.538549	61.77	2.358	4.469382	2.760737
10	6/20/2012	20	H	E	8.001675	0.518752	3.098232	2.584242	0.518752	1.483248	55.57	2.002	4.889164	2.716908
11	6/20/2012	20	L	E	11.180925	0.3578144	5.184032	4.889346	0.3578144	1.831186	71.79	2.189	4.440825	3.188068
12	6/20/2012	20	H	S	9.532425	0.0655856	4.015984	3.736794	0.0655856	1.832414	66.1	1.898	4.872828	3.22094
13	6/20/2012	20	L	E	11.0043	0.2561696	8.271016	9.11537	0.2561696	1.90783	82.72	2.164	3.94677	3.264768
14	6/20/2012	20	L	U	12.005175	0.1079376	7.937288	7.290496	0.1079376	1.847062	68.58	1.955	4.960241	3.401733
15	6/20/2012	20	H	U	9.1203	0.4764	7.770424	7.290496	0.4764	1.6676	59.61	2.144	5.017343	2.990838
16	6/20/2012	20	H	E	15.36105	0.3535792	9.439064	8.443048	0.3535792	2.428421	90.65	2.782	4.121266	3.735928
17	6/20/2012	20	H	S	12.53505	0.1545248	9.355632	8.347002	0.1545248	2.384475	83.52	2.539	4.072957	3.401733
18	6/20/2012	20	L	S	7.295175	0.0147632	8.771608	7.67468	0.0147632	1.722237	55.35	1.737	5.581668	3.089453
19	6/20/2012	20	H	U	8.943675	0.1884064	9.605928	8.443048	0.1884064	1.766594	71.08	1.955	4.546844	3.231897
20	6/20/2012	20	H	E	6.0588	0.1841712	7.853856	6.810266	0.1841712	1.718829	56.45	1.903	5.288503	2.98536
21	6/20/2012	20	H	S	9.94455	0.1333488	7.019536	7.002358	0.1333488	1.810651	59.23	1.944	5.391772	3.193547
22	6/20/2012	20	L	E	16.715175	0.6119264	12.442616	11.228382	0.6119264	2.316074	96.98	2.928	4.083884	3.960551
23	6/20/2012	20	L	S	15.655425	1.9248384	8.187584	7.386542	1.9248384	1.948162	86.32	3.873	4.296264	3.708535
24	6/20/2012	20	L	U	12.8883	0.1121728	9.772792	8.827232	0.1121728	1.993827	75.04	2.106	4.401811	3.303119
1	6/20/2012	40	H	S	16.74966	0.437075	4.605481	4.44856	0.437075	2.482925	90.3	2.92	4.034099	3.642792
2	6/20/2012	40	H	E	11.43018	0.0878192	3.756171	4.04584	0.0878192	2.382181	80.8	2.47	4.257529	3.440084
3	6/20/2012	40	H	U	10.93662	0	1.887689	1.2268	0	1.87	53.3	1.87	5.837463	3.111368
4	6/20/2012	40	L	U	18.12066	0.8811904	7.832859	8.97916	0.8811904	2.46881	96.8	3.35	4.153735	4.020815
5	6/20/2012	40	L	S	25.08534	2.0583118	4.605481	4.95196	2.0583118	2.281688	119	4.34	3.489329	4.152302
6	6/20/2012	40	L	E	9.34626	0.0748838	3.501378	3.54244	0.0748838	1.795116	61	1.87	5.226341	3.188068
7	6/20/2012	40	L	S	9.29142	0	2.736999	2.93836	0	1.89	62.6	1.89	5.049002	3.160675
8	6/20/2012	40	H	U	18.12066	0.3853334	5.964377	5.85808	0.3853334	2.324667	86.9	2.71	4.349547	3.779757
9	6/20/2012	40	L	U	13.89798	0.8510078	3.501378	3.84448	0.8510078	1.858992	78.3	2.71	3.826714	2.996317
10	6/20/2012	40	H	E	12.47214	0.8380724	3.246585	3.54244	0.8380724	1.821928	66.9	2.66	4.470611	2.990838
11	6/20/2012	40	L	E	14.83026	0.4112042	5.199998	4.7506	0.4112042	1.938796	76.9	2.35	4.281094	3.292161
12	6/20/2012	40	H	S	15.32382	0.092131	3.501378	3.94516	0.092131	2.007869	72.9	2.1	4.500966	3.281204
13	6/20/2012	40	L	E	14.50122	0.3637744	7.662997	8.67712	0.3637744	2.166226	87.3	2.53	3.877775	3.385298
14	6/20/2012	40	L	U	17.02386	0.243044	8.597238	8.7778	0.243044	2.086956	79.8	2.33	4.393267	3.505827
15	6/20/2012	40	H	U	16.03674	0.7647718	9.106824	8.97916	0.7647718	2.135228	84.3	2.9	4.314725	3.637313
16	6/20/2012	40	H	E	17.9013	0.5836762	8.427376	9.68392	0.5836762	2.576324	95.2	3.16	4.07392	3.878372
17	6/20/2012	40	H	S	17.3529	0.5966116	8.597238	9.48256	0.5966116	2.293388	94.9	2.89	3.705779	3.516784
18	6/20/2012	40	L	S	12.19794	0.1223136	8.257514	8.87848	0.1223136	1.967686	63.8	2.09	4.979798	3.177111
19	6/20/2012	40	H	U	14.93994	0.3163446	8.342445	9.2812	0.3163446	2.023655	78.8	2.34	4.247395	3.346947
20	6/20/2012	40	H	E	13.73346	0.4068924	7.91779	8.07304	0.4068924	2.053108	75.7	2.46	4.341721	3.286683
21	6/20/2012	40	H	S	12.63666	0.1007546	6.558894	7.06624	0.1007546	1.919245	61.3	2.02	5.254388	3.22094
22	6/20/2012	40	L	E	20.58846	0.6483532	13.268443	15.01996	0.6483532	2.551647	108	3.2	3.778778	4.08108
23	6/20/2012	40	L	S	17.68194	1.9375814	7.832859	8.47576	1.9375814	2.082419	88.9	4.02	4.196231	3.730449
24	6/20/2012	40	L	U	17.02386	0.2085496	8.7671	9.18052	0.2085496	2.22145	82.6	2.43	4.138219	3.418169
1	6/20/2012	70	H	S	15.234768	0.3861013	5.669106	4.649064	0.3861013	2.573899	90.4	2.96	4.07812	3.686621
2	6/20/2012	70	H	E	16.697709	0.2196536	5.422989	4.354488	0.2196536	2.380346	85	2.6	4.304974	3.659228
3	6/20/2012	70	H	U	9.762285	0	2.87978	1.212344	0	1.9	54.7	1.9	5.958482	3.25929
4	6/20/2012	70	L	U	15.234768	1.4253845	2.715702	2.881608	1.4253845	1.594615	84.5	3.02	3.837697	3.242854
5	6/20/2012	70	L	S	23.03712	1.9937425	5.505028	4.845448	1.9937425	2.336257	125	4.33	3.146526	3.933158
6	6/20/2012	70	L	E	10.737579	0.105982	3.864248	3.568952	0.105982	1.804018	59.1	1.91	5.338742	3.155196
7	6/20/2012	70	L	S	8.570259	0	2.797741	3.765336	0	1.48	50.8	1.48	4.647243	2.360799
8	6/20/2012	70	H	U	14.096925	0.2561909	5.094833	4.45268	0.2561909	2.053809	74.5	2.31	4.610208	3.434605
9	6/20/2012	70	L	U	13.121631	0.7230564	4.52056	3.863528	0.7230564	2.056944	83.6	2.78	3.990419	3.33599
10	6/20/2012	70	H	E	15.559866	1.4538024	4.028326	3.568952	1.4538024	1.856198	86.9	3.31	3.901929	3.390776
11	6/20/2012	70	L	E	11.712873	0.4835341	4.110365	3.667144	0.4835341	1.646466	75.9	2.13	4.33028	3.286683
12	6/20/2012	70	H	S	12.308886	0.0329074	3.946287	3.176184	0.0329074	1.647093	67.3	1.68	4.704537	3.166154
13	6/20/2012	70	L	E	15.397317	0.9463399	7.884159	9.558664	0.9463399	1.93366	92.3	2.88	3.994172	3.686621
14	6/20/2012	70	L	U	13.121631	0.6581012	5.669106	5.630984	0.6581012	1.891899	75.1	2.55	3.843868	2.886745
15	6/20/2012	70	H	U	13.229997	1.3076532	5.587067	5.532792	1.3076532	1.342347	81.6	2.65	3.953944	3.226418
16	6/20/2012	70	H	E	17.347905	0.6621609	8.950666	9.165896	0.6621609	2.337839	91.7	3	4.223438	3.872893
17	6/20/2012	70	H	S	11.171043	1.3563696	5.751145	5.92556	1.3563696	1.57363	76.4	2.93	3.713924	2.837438
18	6/20/2012	70	L	S	13.28418	0.4551162	7.884159	8.183976	0.4551162	1.724884	75.5	2.18	4.774095	3.604442
19	6/20/2012	70	H	U	12.363069	0.7433549	8.294354	8.87132	0.7433549	1.796645	81.6	2.54	4.323212	3.527741
20	6/20/2012	70	H	E	15.505683	0.9828772	9.278822	9.755048	0.9828772	2.117123	99.3	3.1	3.867091	3.840021
21	6/20/2012	70	H	S	12.092154	0.1993551	6.899691	7.005672	0.1993551	1.780645	67.4	1.98	4.965797	3.346947
22	6/20/2012	70	L	E	17.835552	0.471355	12.642421	13.78092	0.471355	2.268645	102	2.74	4.00643	4.086558
23	6/20/2012	70	L	S	16.968624	1.7420411	8.376393	8.773128	1.7420411	2.157959	91.7	3.9	4.253311	3.900286
24	6/20/2012	70	L	U	15.614049	0.1141014	9.278822	9.460472	0.1141014	2.055899	81	2.17	4.443164	3.598963

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	6/20/2012	20	H	S	0.631	0.162	0.031	0	1.2162	0	0	0	0.085	0	10.8326	5.5518	0.8405	0.206
2	6/20/2012	20	H	E	0.483	0.111	0.02	0	1.3345	0	0	0	0.0745	0	4.2267	1.3399	0.5393	0.1718
3	6/20/2012	20	H	U	0.371	0.093	0.014	0	0.8796	0	0	0	0.0735	0	2.5369	2.5391	0.4795	0.1348
4	6/20/2012	20	L	U	0.751	0.197	0.039	0	0.9176	0	0	0	0.071	0	15.7025	3.8815	0.7372	0.2182
5	6/20/2012	20	L	S	0.725	0.176	0.032	0.045	1.2099	0	0	0	0.0658	0	0.1787	0	0.4096	0.1892
6	6/20/2012	20	L	E	0.318	0.079	0.015	0	1.2261	0	0	0	0.052	0	12.5029	3.5481	0.8031	0.1587
7	6/20/2012	20	L	S	0.298	0.076	0.014	0	0.6683	0	0	0	0.0633	0	7.7857	3.3137	0.5775	0.0816
8	6/20/2012	20	H	U	0.583	0.153	0.03	0	0.6576	0	0	0	0.056	0	4.4127	1.3516	0.4573	0.2313
9	6/20/2012	20	L	U	0.344	0.081	0.015	0	0.8395	0	0	0	0.056	0	20.426	0	1.2506	0.1784
10	6/20/2012	20	H	E	0.284	0.064	0.011	0	0.8315	0	0	0	0.0572	0	10.6651	7.3221	0.9027	0.1747
11	6/20/2012	20	L	E	0.417	0.095	0.019	0	0.5913	0	0	0	0.0685	0	6.5922	2.2066	0.5246	0.2877
12	6/20/2012	20	H	S	0.389	0.093	0.017	0	0.7427	0	0	0	0.1356	0	5.2849	3.4726	0.537	0.2925
13	6/20/2012	20	L	E	0.442	0.105	0.021	0	0.8657	0	0	0	0.0795	0	21.7051	9.8571	1.2313	0.2649
14	6/20/2012	20	L	U	0.469	0.111	0.021	0.0437	0.691	0	0	0	0.0656	0	0.9763	1.4056	0.4806	0.2078
15	6/20/2012	20	H	U	0.344	0.083	0.017	0	0.6255	0	0	0	0.0655	0	12.4202	6.2828	0.8189	0.2091
16	6/20/2012	20	H	E	0.666	0.164	0.031	0.0583	2.3037	0	0	0	0.0649	0	2.3715	0.5908	0.4279	0.2871
17	6/20/2012	20	H	S	0.56	0.138	0.029	0.0279	1.1434	0	0	0	0.0766	0	5.8014	3.9293	0.6282	0.3108
18	6/20/2012	20	L	S	0.394	0.109	0.029	0	0.4657	0	0	0	0.0713	0	6.1737	1.6154	0.4653	0.241
19	6/20/2012	20	H	U	0.408	0.097	0.018	0	0.6225	0	0	0	0.0858	0	5.8498	2.7079	0.5362	0.3387
20	6/20/2012	20	H	E	0.344	0.086	0.017	0	0.6185	0	0	0	0.0715	0	10.4368	4.2086	0.6265	0.2564
21	6/20/2012	20	H	S	0.404	0.107	0.031	0.047	0.9497	0	0	0	0.06	0	0.4942	0	0.3426	0.206
22	6/20/2012	20	L	E	0.732	0.192	0.045	0	0.9722	0	0	0	0.0777	0	16.8912	6.8588	0.9784	0.4321
23	6/20/2012	20	L	S	0.617	0.145	0.026	0	1.521	0	0	0	0.0781	0	8.1236	3.1022	0.5053	0.3431
24	6/20/2012	20	L	U	0.534	0.133	0.027	0	0.9753	0	0	0	0.0824	0	11.9536	2.9523	0.5996	0.3452
1	6/20/2012	40	H	S	0.576	0.148	0.03	0.0249	1.1002	0	0	0	0.1089	0	10.5136	5.6873	0.9126	0.1423
2	6/20/2012	40	H	E	0.474	0.11	0.022	0.0317	1.1142	0	0	0	0.1118	0	3.9433	1.3292	0.4389	0.173
3	6/20/2012	40	H	U	0.355	0.094	0.021	0.0479	0.5564	0	0	0	0.112	0	2.7967	2.4006	0.4749	0.1294
4	6/20/2012	40	L	U	0.69	0.184	0.045	0	0.8022	0	0	0	0.116	0	17.4224	4.2419	0.8325	0.284
5	6/20/2012	40	L	S	0.77	0.19	0.07	0.0628	1.6299	0	0	0	0.1238	0	0.1755	0	0.3839	0.2322
6	6/20/2012	40	L	E	0.364	0.099	0.03	0	0.6591	0	0	0	0.1133	0	11.6428	3.1901	0.5668	0.1801
7	6/20/2012	40	L	S	0.364	0.09	0.018	0.0173	0.7684	0	0	0	0.1221	0	7.2005	2.8187	0.5189	0.19
8	6/20/2012	40	H	U	0.648	0.167	0.037	0.047	0.7147	0	0	0	0.1151	0	3.9851	1.1237	0.5162	0.2637
9	6/20/2012	40	L	U	0.406	0.093	0.019	0	0.7713	0	0	0	0.1131	0	17.0452	7.2591	1.0021	0.1979
10	6/20/2012	40	H	E	0.342	0.075	0.015	0.027	0.7961	0	0	0	0.1151	0	10.3199	7.2882	0.9945	0.1923
11	6/20/2012	40	L	E	0.434	0.096	0.019	0.0181	0.6362	0	0	0	0.1207	0	6.2318	1.9787	0.5356	0.2729
12	6/20/2012	40	H	S	0.407	0.094	0.019	0.0335	0.8773	0	0	0	0.1576	0	4.401	2.6422	0.4707	0.2518
13	6/20/2012	40	L	E	0.449	0.105	0.021	0	0.6968	0	0	0	0.1451	0	19.8663	9.4707	1.233	0.2859
14	6/20/2012	40	L	U	0.502	0.115	0.022	0.0163	0.6528	0	0	0	0.1234	0	0.8855	1.2179	0.3643	0.2761
15	6/20/2012	40	H	U	0.51	0.137	0.051	0.0143	0.6414	0	0	0	0.1362	0.2244	11.4085	5.6594	0.8475	0.3046
16	6/20/2012	40	H	E	0.683	0.177	0.048	0.0198	1.141	0	0	0	0.1349	0	1.9096	0.4691	0.4224	0.3663
17	6/20/2012	40	H	S	0.576	0.127	0.025	0.021	1.1671	0	0	0	0.1343	0	4.4723	3.1301	0.6273	0.3394
18	6/20/2012	40	L	S	0.401	0.106	0.028	0.0151	0.5006	0	0	0	0.1275	0.1532	5.4623	1.5738	0.4662	0.2978
19	6/20/2012	40	H	U	0.454	0.117	0.033	0.0121	0.9972	0	0	0	0.1329	0	5.7537	2.489	0.5085	0.342
20	6/20/2012	40	H	E	0.444	0.106	0.022	0	0.7301	0	0	0	0.1354	0	9.5927	3.5563	0.583	0.3173
21	6/20/2012	40	H	S	0.391	0.109	0.041	0.0257	1.0006	0	0	0	0.1274	0	0.5674	0.0599	0.3205	0.2535
22	6/20/2012	40	L	E	0.675	0.181	0.051	0	0.941	0	0	0	0.1388	0	16.674	6.3885	0.9003	0.4362
23	6/20/2012	40	L	S	0.592	0.137	0.025	0.017	1.0938	0	0	0	0.1333	0.1812	7.522	2.7916	0.4828	0.3462
24	6/20/2012	40	L	U	0.519	0.125	0.025	0.0141	1.0313	0	0	0	0.1319	0.1465	9.6637	2.3739	0.5632	0.3461
1	6/20/2012	70	H	S	0.577	0.148	0.029	0	1.126	0	0	0	0.1587	0	7.3061	4.4651	0.8478	0.4744
2	6/20/2012	70	H	E	0.534	0.124	0.023	0	1.1698	0	0	0	0.1546	0.121	3.4164	1.1798	0.6043	0.5177
3	6/20/2012	70	H	U	0.374	0.091	0.015	0.0281	0.8308	0	0	0	0.1443	0	0	0	0	0.1613
4	6/20/2012	70	L	U	0.378	0.058	0.008	0.0378	1.0372	0	0	0	0.1577	0	1.6777	0.1986	0.0615	0.1736
5	6/20/2012	70	L	S	0.731	0.132	0.02	0.027	1.694	0	0	0	0.1348	0	0	0	0.0632	0.208
6	6/20/2012	70	L	E	0.362	0.083	0.015	0	0.7415	0	0	0	0.1337	0	8.8134	2.3299	0.2432	0.1107
7	6/20/2012	70	L	S	0.181	0.037	0.009	0.0224	0.8862	0	0	0	0.1236	0	0	0	0.0733	0.0937
8	6/20/2012	70	H	U	0.511	0.119	0.022	0.0273	0.8322	0	0	0	0.1174	0.1221	2.9468	0.9023	0.133	0.1202
9	6/20/2012	70	L	U	0.477	0.107	0.019	0	0.9111	0	0	0	0.1395	0.2209	15.0152	6.2074	0.9139	0
10	6/20/2012	70	H	E	0.461	0.096	0.017	0	1.0055	0	0	0	0.1406	0	0.2548	0.1907	0.1351	0.125
11	6/20/2012	70	L	E	0.382	0.072	0.012	0.0355	1.0678	0	0	0	0.1617	0	0	0	0.0675	0.151
12	6/20/2012	70	H	S	0.361	0.07	0.012	0.0393	0.9081	0	0	0	0.1543	0	0.0062	0.8189	0.4554	0.2693
13	6/20/2012	70	L	E	0.527	0.118	0.021	0	0.8048	0	0	0	0.1585	0	14.0793	6.856	0.9662	0.3362
14	6/20/2012	70	L	U	0.259	0.031	0.004	0.0265	1.2514	0	0	0	0.1418	0	0.8203	0	0.3388	0.161
15	6/20/2012	70	H	U	0.395	0.05	0.005	0.0193	1.0267	0	0	0	0.1298	0	0	0	0.0591	0.1361
16	6/20/2012	70	H	E	0.68	0.16	0.029	0.065	1.7648	0	0	0	0.1323	0.7046	0.6588	0.2438	0.0822	0.1317
17	6/20/2012	70	H	S	0.309	0.037	0.005	0.0192	1.5745	0	0	0	0.1381	0	0	0	0.0614	0.1806
18	6/20/2012	70	L	S	0.507	0.105	0.017	0.0543	0.8794	0	0	0	0.1324	0	0.0004	0.1653	0.0787	0.1008
19	6/20/2012	70	H	U	0.502	0.109	0.018	0	0.9412	0	0	0	0.1415	0	3.9821	1.6129	0.168	0.1464
20	6/20/2012	70	H	E	0.671	0.148	0.026	0.0321	0.8465	0	0	0	0.1266	0	6.173	2.4868	0.2155	0.0998
21	6/20/2012	70	H	S	0.413	0.089	0.015	0.0274	1.2202	0	0	0	0.1427	0	0.0329	0	0.1881	0.2516
22	6/20/2012	70	L	E	0.689	0.175	0.038	0	0.8276	0	0	0	0.1376	0	15.3862	6.1621	0.883	0.3702
23	6/20/2012	70	L	S	0.66	0.15	0.025	0	0	0	0	0	0.1148	0	0	0.0051	0	0.0185
24	6/20/2012	70	L	U	0.573	0.136	0.026	0	1.0908	0	0	0	0.1253	0	7.9156	1.7983	0.2133	0.0769

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	7/5/2012	20	H	S	15.406908	0.1840203			0.1840203	2.63998	99.69	2.824	4.233937	4.220812
2	7/5/2012	20	H	E	13.047348	0.0012514			0.0012514	2.285749	86.69	2.287	4.513623	3.91286
3	7/5/2012	20	H	U	9.213063	0			0	1.659	53.08	1.659	6.150226	3.26454
4	7/5/2012	20	L	U	14.581062	0.8567654			0.8567654	2.293235	91.54	3.15	5.088953	4.658428
5	7/5/2012	20	L	S	18.23838	1.2456354			1.2456354	3.046365	98.6	4.292	4.658819	4.593596
6	7/5/2012	20	L	E	8.387217	0			0	1.694	60.11	1.694	5.161304	3.10246
7	7/5/2012	20	L	S	8.741151	0			0	1.991	71.6	1.991	5.159291	3.694052
8	7/5/2012	20	H	U	10.451832	0.0245836			0.0245836	1.927416	65.92	1.952	5.124387	3.377996
9	7/5/2012	20	L	U	10.156887	1.1484179			1.1484179	1.771582	82.89	2.92	3.547328	2.94038
10	7/5/2012	20	H	E	8.918118	0.5184485			0.5184485	1.603552	63.01	2.122	4.460746	2.810716
11	7/5/2012	20	L	E	11.513634	0.0206949			0.0206949	2.134305	79.37	2.155	4.838004	3.839924
12	7/5/2012	20	H	S	11.100711	0			0	1.872	67.35	1.872	5.015584	3.377996
13	7/5/2012	20	L	E	13.991172	0.2967926			0.2967926	2.248207	99.49	2.545	4.014373	3.9939
14	7/5/2012	20	L	U	11.041722	0			0	1.758	65.53	1.758	5.612458	3.677844
15	7/5/2012	20	H	U	10.333854	0.3745666			0.3745666	1.758433	67.31	2.133	4.898167	3.296956
16	7/5/2012	20	H	E	17.589501	0.2073525			0.2073525	2.755647	98.75	2.963	4.577883	4.52066
17	7/5/2012	20	H	S	12.103524	0.0479158			0.0479158	2.505084	86.91	2.553	4.353004	3.783196
18	7/5/2012	20	L	S	9.036096	0			0	1.829	60.89	1.829	5.813887	3.540076
19	7/5/2012	20	H	U	10.097898	0.0673593			0.0673593	1.862641	75.36	1.93	4.912627	3.702156
20	7/5/2012	20	H	E	7.974294	0			0	1.842	63.8	1.842	5.015216	3.199708
21	7/5/2012	20	H	S	9.331041	0			0	1.707	58.31	1.707	5.695881	3.321268
22	7/5/2012	20	L	E	13.991172	0.2345734			0.2345734	2.282427	97.51	2.517	4.586233	4.472036
23	7/5/2012	20	L	S	12.988359	1.6733924			1.6733924	2.475608	96.34	4.149	4.885875	4.707052
24	7/5/2012	20	L	U	14.345106	0.0245836			0.0245836	2.340416	85.82	2.365	4.757683	4.083044

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	7/5/2012	20	H	S	0.65	0.173	0.032	0	1.2926	0	0	0	0.0555	0	15.5343	8.0284	1.1645	0.2326
2	7/5/2012	20	H	E	0.525	0.129	0.025	0.0319	1.3035	0	0	0	0.0477	0	11.3717	5.4987	0.8738	0.224
3	7/5/2012	20	H	U	0.385	0.099	0.017	0.0489	0.7587	0	0	0	0.0457	0	0.828	1.2512	0.4901	0.1388
4	7/5/2012	20	L	U	0.717	0.192	0.037	0.0328	0.8435	0	0	0	0.0715	0	7.6899	2.0997	0.582	0.3294
5	7/5/2012	20	L	S	0.702	0.173	0.03	0.0737	1.2618	0	0	0	0.0423	0	0.1278	0	0.4398	0.2889
6	7/5/2012	20	L	E	0.341	0.085	0.016	0	0.6211	0	0	0	0.0463	0	7.2218	2.045	0.4773	0.2507
7	7/5/2012	20	L	S	0.451	0.12	0.022	0	1.2013	0	0	0	0.0592	0	10.4186	4.9864	0.924	0.2324
8	7/5/2012	20	H	U	0.469	0.128	0.024	0.0312	0.7211	0	0	0	0.0562	0	7.1324	2.805	0.6654	0.2874
9	7/5/2012	20	L	U	0.382	0.098	0.02	0	0.7886	0	0	0	0.0615	0.2746	23.0725	11.3697	1.5949	0.2302
10	7/5/2012	20	H	E	0.295	0.073	0.016	0.034	1.0411	0	0	0	0.0547	0.249	10.5774	9.7862	1.185	0.2041
11	7/5/2012	20	L	E	0.45	0.112	0.021	0.031	0.4583	0	0	0	0.0687	0	6.5977	2.3475	0.6321	0.3303
12	7/5/2012	20	H	S	0.401	0.098	0.018	0.0287	1.0473	0	0	0	0.0754	0	6.6521	5.8897	0.8207	0.2793
13	7/5/2012	20	L	E	0.491	0.124	0.024	0	1.019	0	0	0	0.0657	0	20.3838	11.6981	1.3962	0.3401
14	7/5/2012	20	L	U	0.423	0.104	0.02	0.0415	0.6686	0	0	0	0.0607	0	0.3903	0.3904	0.4191	0.2633
15	7/5/2012	20	H	U	0.363	0.094	0.019	0	0.6613	0	0	0	0.0599	0.245	12.7028	7.6512	1.0856	0.2649
16	7/5/2012	20	H	E	0.7	0.18	0.032	0.0344	0.8316	0	0	0	0.0638	0	3.4618	0.9646	0.3716	0.3983
17	7/5/2012	20	H	S	0.569	0.149	0.028	0	1.4639	0	0	0	0.0782	0	6.8645	4.4852	0.8594	0.3658
18	7/5/2012	20	L	S	0.438	0.113	0.021	0.0313	0.7045	0	0	0	0.0497	0	3.8125	0.735	0.4323	0.298
19	7/5/2012	20	H	U	0.484	0.124	0.024	0	0.7519	0	0	0	0.0507	0	11.648	6.0255	0.9609	0.3654
20	7/5/2012	20	H	E	0.37	0.094	0.017	0	1.4183	0	0	0	0.0516	0	9.1191	3.3255	0.7173	0.3211
21	7/5/2012	20	H	S	0.383	0.098	0.021	0	1.3117	0	0	0	0.0418	0	3.6153	0.7988	0.411	0.2606
22	7/5/2012	20	L	E	0.632	0.171	0.036	0	0.9102	0	0	0	0.0446	0	14.023	6.2487	1.0002	0.4404
23	7/5/2012	20	L	S	0.729	0.179	0.029	0.0791	1.6223	0	0	0	0.0527	0	0.2702	0	0.468	0.326
24	7/5/2012	20	L	U	0.569	0.147	0.032	0	1.1229	0	0	0	0.0619	0	5.6896	1.5567	0.5681	0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	7/19/2012	20	H	S	22.543437	0.6341024	6.510694	9.40415	0.6341024	2.815898	122	3.45	3.718744	4.536868
2	7/19/2012	20	H	E	15.599811	0.261828	5.669964	6.27403	0.261828	2.558172	108	2.82	3.893152	4.204604
3	7/19/2012	20	H	U	10.483455	0	1.802606	1.35527	0	1.77	53.3	1.77	6.033613	3.215916
4	7/19/2012	20	L	U	14.686176	0.714124	7.099205	7.7273	0.714124	2.615876	95.8	3.33	4.507369	4.31806
5	7/19/2012	20	L	S	18.401625	1.7822384	4.913307	5.26792	1.7822384	2.367762	102	4.15	4.296953	4.382892
6	7/19/2012	20	L	E	12.310725	0.0287216	3.31592	3.81465	0.0287216	1.861278	64.1	1.89	4.966459	3.1835
7	7/19/2012	20	L	S	12.554361	0.0043672	3.399993	3.59107	0.0043672	2.225633	67	2.23	4.739397	3.175396
8	7/19/2012	20	H	U	12.493452	0.0635136	4.661088	4.93255	0.0635136	1.906486	64.7	1.97	4.482009	2.89986
9	7/19/2012	20	L	U	15.538902	1.6743832	4.15665	5.26792	1.6743832	1.725617	94.7	3.4	3.481474	3.296956
10	7/19/2012	20	H	E	10.483455	0.748916	2.47519	2.69675	0.748916	1.501084	63.4	2.25	4.34383	2.753988
11	7/19/2012	20	L	E	14.990721	0.1470144	5.754037	4.82076	0.1470144	2.162986	85.9	2.31	4.30041	3.694052
12	7/19/2012	20	H	S	12.067089	0.12266	3.904431	4.59718	0.12266	1.93734	80.1	2.06	4.551096	3.645428
13	7/19/2012	20	L	E	13.772541	0.5506016	7.51957	9.85131	0.5506016	1.969398	91.3	2.52	4.09044	3.734572
14	7/19/2012	20	L	U	15.843447	0.0322008	7.51957	11.52816	0.0322008	1.847799	73.8	1.88	4.533306	3.34558
15	7/19/2012	20	H	U	14.137995	0.6758528	7.183278	10.74563	0.6758528	1.764147	71.1	2.44	4.443302	3.159188
16	7/19/2012	20	H	E	24.979797	0.487976	9.957687	11.30458	0.487976	2.612024	109	3.1	4.273787	4.658428
17	7/19/2012	20	H	S	20.350713	0.105264	9.705468	9.18057	0.105264	2.684736	103	2.79	4.066404	4.188396
18	7/19/2012	20	L	S	11.39709	0.0148048	8.192154	8.62162	0.0148048	1.825195	64.8	1.84	5.012858	3.248332
19	7/19/2012	20	H	U	16.208901	0.0078464	9.285103	11.97532	0.0078464	2.062154	81.5	2.07	4.741394	3.864236
20	7/19/2012	20	H	E	11.336181	0.2479112	7.267351	11.52816	0.2479112	1.982089	70.7	2.23	4.697692	3.321268
21	7/19/2012	20	H	S	10.970727	0.070472	6.510694	9.29236	0.070472	1.789528	63.8	1.86	4.97711	3.175396
22	7/19/2012	20	L	E	15.782538	0.2861824	10.714344	11.19279	0.2861824	2.303818	95.9	2.59	4.240705	4.066836
23	7/19/2012	20	L	S	19.985259	2.3910984	9.285103	8.28625	2.3910984	2.248902	117	4.64	4.127019	4.828612
24	7/19/2012	20	L	U	18.645261	0.1017848	9.789541	7.95088	0.1017848	2.128215	92.3	2.23	4.186605	3.864236
1	7/19/2012	40	H	S	20.992566	0.3203048	5.165526	6.5346	0.3203048	3.019695	115	3.34	4.015572	4.617908
2	7/19/2012	40	H	E	20.13333	0.2577728	4.577015	6.0918	0.2577728	2.642227	107	2.9	4.187047	4.48014
3	7/19/2012	40	H	U	10.92723	0	1.466314	1.3317	0	1.65	54.9	1.65	6.197282	3.402308
4	7/19/2012	40	L	U	18.29211	0.3984698	5.669964	6.8667	0.3984698	2.52153	84.7	2.92	5.212878	4.415308
5	7/19/2012	40	L	S	20.685696	1.342703	4.745161	5.9811	1.342703	3.237297	137	4.58	3.548196	4.861028
6	7/19/2012	40	L	E	14.3028	0	3.147774	4.0992	0	1.89	68.2	1.89	5.570974	3.799404
7	7/19/2012	40	L	S	15.898524	0	3.063701	4.4313	0	2.18	77.1	2.18	4.927891	3.799404
8	7/19/2012	40	H	U	15.22341	0.0639236	4.324796	5.649	0.0639236	2.026076	69.2	2.09	4.928341	3.410412
9	7/19/2012	40	L	U	14.793792	0.8987258	3.904431	4.7634	0.8987258	2.871274	98.5	3.77	3.659805	3.604908
10	7/19/2012	40	H	E	14.364174	0.6579776	2.222971	3.435	0.6579776	2.112022	74	2.77	4.674373	3.459036
11	7/19/2012	40	L	E	18.844476	0.1577216	5.333672	6.6453	0.1577216	2.392278	91.1	2.55	4.553102	4.147876
12	7/19/2012	40	H	S	16.205394	0.0201512			0.0201512	2.099849	81.5	2.12	4.572353	3.726468
13	7/19/2012	40	L	E	20.378826	0.5360402	7.51957	9.7449	0.5360402	2.48396	99.3	3.02	4.381144	4.350476
14	7/19/2012	40	L	U	18.29211	0.0013916	7.771789	9.7449	0.0013916	2.008608	78	2.01	4.819082	3.758884
15	7/19/2012	40	H	U	15.407532	0.4328624	7.435497	9.1914	0.4328624	2.137138	75.8	2.57	5.023098	3.807508
16	7/19/2012	40	H	E	25.411494	0.4141028	9.537322	11.2947	0.4141028	2.985897	109	3.4	4.363006	4.755676
17	7/19/2012	40	H	S	22.58829	0	9.873614	11.6268	0	2.92	106	2.92	4.195966	4.447724
18	7/19/2012	40	L	S	11.418222	0	7.51957	8.8593						3.42662
19	7/19/2012	40	H	U	17.801118	0	9.032884	11.184	0	1.94	81.7	1.94	4.729787	3.864236
20	7/19/2012	40	H	E	13.259442	0.1764812	7.435497	9.5235	0.1764812	2.253519	79	2.43	4.70679	3.718364
21	7/19/2012	40	H	S	13.68906	0	6.67884	8.3058	0	1.63	64	1.63	5.214806	3.337476
22	7/19/2012	40	L	E	17.98524	0.3171782	10.378052	12.1803	0.3171782	2.502822	99.9	2.82	4.4684	4.463932
23	7/19/2012	40	L	S	19.949208	1.1426006	8.3603	10.8519	1.1426006	2.847399	103	3.99	4.562085	4.698948
24	7/19/2012	40	L	U	19.82646	0.138962	9.032884	11.7375	0.138962	2.211038	96	2.35	4.379796	4.204604
1	7/19/2012	70	H	S	25.358205	0.8438	4.661088	5.9811	0.8438	2.6462	115	3.49	3.97329	4.569284
2	7/19/2012	70	H	E	26.68215	0.7495	3.736285	6.2025	0.7495	2.5605	118	3.31	4.030234	4.755676
3	7/19/2012	70	H	U	14.82969	0.1058	1.63446	2.2173	0.1058	1.8642	73.4	1.97	5.043809	3.702156
4	7/19/2012	70	L	U	19.36893	1.4957	1.550387	1.9959	1.4957	1.6143	86.5	3.11	3.942673	3.410412
5	7/19/2012	70	L	S	30.275715	2.6601	3.820358	5.9811	2.6601	1.9399	146	4.6	3.340573	4.877236
6	7/19/2012	70	L	E	15.08187	0.1632	2.643336	3.8778	0.1937	1.8163	68.2	2.01	5.083783	3.46714
7	7/19/2012	70	L	S	14.892735	0	1.130022	3.8778	0	1.75	71.7	1.75	4.880831	3.499556
8	7/19/2012	70	H	U	17.47758	0.2985	0.037073	3.5457	0.3728	1.8872	76.2	2.26	4.624499	3.523868
9	7/19/2012	70	L	U	16.531905	1.6843	2.727409	4.9848	1.7159	2.1041	102	3.82	3.772577	3.848028
10	7/19/2012	70	H	E	15.649275	1.6023	3.063701	3.5457	1.6353	1.5747	82.5	3.21	4.664276	3.848028
11	7/19/2012	70	L	E	16.21668	0.4297	3.484066	5.5383	0.4961	2.1939	90.4	2.69	4.489748	4.058732
12	7/19/2012	70	H	S	16.72104	0.1509	2.391117	4.0992	0.1831	1.8469	85.4	2.03	4.410993	3.766988
13	7/19/2012	70	L	E	22.01682	0.9791	2.979628	10.1877	0.9791	2.5309	111	3.51	4.058065	4.504452
14	7/19/2012	70	L	U	13.127475	0.7864	1.382241	5.649	0.7864	1.8936	81.4	2.68	3.572437	2.907964
15	7/19/2012	70	H	U	12.623115	1.1513	1.214095	5.8704	1.1513	1.8087	88	2.96	3.829423	3.369892
16	7/19/2012	70	H	E	22.962495	0.9258	3.988504	10.9626	0.9258	2.6642	112	3.59	4.267846	4.779988
17	7/19/2012	70	H	S	14.07315	1.8647	0.205219	6.4239	1.8647	1.4753	87.3	3.34	3.609489	3.151084
18	7/19/2012	70	L	S	17.036265	0.2247	2.811482	11.0733	0.2247	2.1053	82	2.33	4.890376	4.010108
19	7/19/2012	70	H	U	18.801525	0.4584	3.652212	10.9626	0.4584	2.2216	92.8	2.68	4.58322	4.253228
20	7/19/2012	70	H	E	19.49502	0.8602	4.829234	10.1877	0.8602	2.2698	96.5	3.13	4.197542	4.050628
21	7/19/2012	70	H	S	15.46014	0.114	2.811482	8.1951	0.114	1.946	76.8	2.06	4.862724	3.734572
22	7/19/2012	70	L	E	25.358205	0.9463	8.276227	12.5124	0.9463	2.6337	113	3.58	4.215734	4.76378
23	7/19/2012	70	L	S	23.78208	2.3157	3.063701	8.6379	2.3157	2.1443	111	4.46	4.145676	4.6017
24	7/19/2012	70	L	U	23.5299	0.3026	3.652212	9.6342	0.3026	2.2474	103	2.55	4.105744	4.228916

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	7/19/2012	20	H	S	0.799	0.204	0.04	0	1.5516	0	0	0	0.125	0	19.1728	9.8415	1.3727	0.2336
2	7/19/2012	20	H	E	0.634	0.15	0.029	0	1.43	0	0	0	0.116	0	15.6932	7.9927	1.1309	0.1969
3	7/19/2012	20	H	U	0.388	0.095	0.015	0.0957	0.9934	0	0	0	0.1435	0	0.3328	0.0612	0.3386	0.148
4	7/19/2012	20	L	U	0.734	0.185	0.035	0.1245	1.0071	0	0	0	0.1358	0	0.1866	0	0.4772	0.2986
5	7/19/2012	20	L	S	0.707	0.17	0.032	0.0455	1.3518	0	0	0	0.1381	0	3.7059	0.7707	0.4636	0.2634
6	7/19/2012	20	L	E	0.393	0.093	0.019	0.0403	0.7159	0	0	0	0.1212	0	1.7485	0.1135	0.3086	0.1884
7	7/19/2012	20	L	S	0.398	0.101	0.021	0.082	1.0574	0	0	0	0.1261	0	2.8713	0.7857	0.3695	0.1993
8	7/19/2012	20	H	U	0.416	0.109	0.024	0	1.4166	0	0	0	0.1198	0	4.9369	1.2767	0.4692	0.2234
9	7/19/2012	20	L	U	0.487	0.111	0.021	0	1.1193	0	0	0	0.1286	0.5751	14.3947	11.282	1.3048	0.2432
10	7/19/2012	20	H	E	0.319	0.073	0.014	0.0272	0.9006	0	0	0	0.1202	0.2251	6.4796	5.9481	0.7935	0.1755
11	7/19/2012	20	L	E	0.501	0.116	0.023	0.0534	0.996	0	0	0	0.1369	0	1.8434	0.2653	0.4162	0.2808
12	7/19/2012	20	H	S	0.472	0.107	0.021	0.0312	1.8045	0	0	0	0.1205	0	4.6598	3.2875	0.5234	0.2194
13	7/19/2012	20	L	E	0.526	0.12	0.023	0	0.8637	0	0	0	0.1212	0	9.3684	5.0357	0.6564	0.2263
14	7/19/2012	20	L	U	0.432	0.1	0.021	0.0378	0.9031	0	0	0	0.1315	0	0.2114	0.0546	0.3269	0.1694
15	7/19/2012	20	H	U	0.378	0.092	0.02	0	0.9535	0	0	0	0.1308	0.2665	8.3216	5.1622	0.746	0.1685
16	7/19/2012	20	H	E	0.854	0.211	0.04	0.0469	1.6883	0	0	0	0.1419	0	0.225	0.0378	0.4074	0.2884
17	7/19/2012	20	H	S	0.709	0.175	0.035	0.0444	1.3168	0	0	0	0.1446	0	2.0766	2.0367	0.6885	0.3077
18	7/19/2012	20	L	S	0.431	0.109	0.021	0.0322	0.9977	0	0	0	0.1486	0	0.0706	0	0.3104	0.2014
19	7/19/2012	20	H	U	0.527	0.13	0.028	0.0306	0.8318	0	0	0	0.1343	0	2.4006	1.0515	0.4368	0.2731
20	7/19/2012	20	H	E	0.435	0.108	0.022	0.0285	1.1095	0	0	0	0.123	0	3.4287	1.9582	0.5119	0.2571
21	7/19/2012	20	H	S	0.391	0.094	0.02	0.0767	1.5663	0	0	0	0.1206	0	0.1471	0	0.3531	0.1714
22	7/19/2012	20	L	E	0.6	0.151	0.033	0.0296	0.9605	0	0	0	0.1285	0	3.3457	1.7153	0.5091	0.3002
23	7/19/2012	20	L	S	0.875	0.196	0.035	0.1009	1.7796	0	0	0	0.137	0	0.2163	0	0.3986	0.304
24	7/19/2012	20	L	U	0.62	0.145	0.029	0.0696	1.3605	0	0	0	0.1278	0	0.1373	0	0.379	0
1	7/19/2012	40	H	S	0.771	0.191	0.035	0	1.4111	0	0	0	0.135	0	16.9	8.138	1.1604	0.1944
2	7/19/2012	40	H	E	0.685	0.154	0.025	0	1.2374	0	0	0	0.1415	0	13.1784	7.2887	0.9459	0.2314
3	7/19/2012	40	H	U	0.416	0.1	0.015	0.0381	0.6706	0	0	0	0.1283	0	0.3642	0.1094	0.318	0.1447
4	7/19/2012	40	L	U	0.647	0.157	0.028	0.0503	0.7215	0	0	0	0.1435	0	0.1441	0	0.4293	0.2644
5	7/19/2012	40	L	S	0.87	0.167	0.023	0.0356	1.6278	0	0	0	0.1439	0.2103	1.3579	0.2503	0.4175	0.2717
6	7/19/2012	40	L	E	0.423	0.091	0.013	0.0282	0.6545	0	0	0	0.1477	0	1.7318	0.1782	0.3432	0.2303
7	7/19/2012	40	L	S	0.495	0.114	0.019	0	0.9053	0	0	0	0.1348	0	2.5731	0.6856	0.4041	0.2224
8	7/19/2012	40	H	U	0.483	0.12	0.022	0	0.7727	0	0	0	0.1389	0	4.2004	1.2319	0.4365	0.2353
9	7/19/2012	40	L	U	0.523	0.121	0.022	0	1.1365	0	0	0	0.1422	0.544	13.915	11.0915		0.2721
10	7/19/2012	40	H	E	0.417	0.087	0.011	0.0296	0.7757	0	0	0	0.1427	0.2699	5.9122	5.3825	0.7226	0.2102
11	7/19/2012	40	L	E	0.563	0.124	0.021	0.0443	0.7781	0	0	0	0.1444	0.1948	1.8641	0.2409	0.4172	0.3094
12	7/19/2012	40	H	S	0.499	0.11	0.021	0	0.838	0	0	0	0.138	0	4.0892	2.6662	0.4639	0.2386
13	7/19/2012	40	L	E	0.649	0.14	0.021	0	0.757	0	0	0	0.139	0	7.8395	4.1821	0.5641	0.2849
14	7/19/2012	40	L	U	0.481	0.105	0.018	0.0328	0.8215	0	0	0	0.1652	0	0.0605	0.0257	0.2063	0.2431
15	7/19/2012	40	H	U	0.457	0.105	0.02	0	0.701	0	0	0	0.1373	0.235	7.8756	4.9601	0.7126	0.2418
16	7/19/2012	40	H	E	0.853	0.205	0.036	0.0473	1.0916	0	0	0	0.1451	0	0.1888	0.0352	0.3663	0.3512
17	7/19/2012	40	H	S	0.709	0.174	0.033	0.0316	1.1326	0	0	0	0.1411	0	2.7067	2.2064	0.695	0.346
18	7/19/2012	40	L	S	0.401	0.097	0.016	0.0434	0.7618	0	0	0	0.15	0	0.1068	0	0.3216	0.2667
19	7/19/2012	40	H	U	0.504	0.124	0.026	0	0.7384	0	0	0	0.1281	0	2.9689	1.0999	0.4872	0.3196
20	7/19/2012	40	H	E	0.5	0.118	0.022	0	0.915	0	0	0	0.1327	0	3.5552	1.8656	0.5249	0.2875
21	7/19/2012	40	H	S	0.389	0.086	0.013	0.0452	1.356	0	0	0	0.1335	0	0.1725	0	0.3205	0.2489
22	7/19/2012	40	L	E	0.64	0.157	0.034	0	1.0967	0	0	0	0.1465	0	3.4471	1.6654	0.5557	0.3767
23	7/19/2012	40	L	S	0.735	0.163	0.026	0.0513	1.7071	0	0	0	0.1397	0	0.1152	0	0.3941	0.3384
24	7/19/2012	40	L	U	0.632	0.139	0.024	0.0517	1.2612	0	0	0	0.1361	0	0.1213	0	0.3964	0.3473
1	7/19/2012	70	H	S	0.722	0.172	0.032	0	1.4436	0	0	0	0.2051	0	10.951	6.8224	0.934	0.2368
2	7/19/2012	70	H	E	0.803	0.18	0.032	0	1.6699	0	0	0	0.2085	0	9.8229	5.388	0.7914	0.2685
3	7/19/2012	70	H	U	0.487	0.109	0.017	0.0565	1.2236	0	0	0	0.199	0	0.1599	0	0.3465	0.1993
4	7/19/2012	70	L	U	0.406	0.061	0.007	0.054	1.1657	0	0.1091	0	0.2036	0	0.1186	0	0.2954	0.1653
5	7/19/2012	70	L	S	0.886	0.163	0.024	0.0421	2.243	0	0	0	0.1924	0	0.504	0.0527	0.4164	0.1903
6	7/19/2012	70	L	E	0.409	0.089	0.016	0.0419	1.1185	0	0	0.0305	0.189	0	0.8924	0.1191	0.3619	0.2149
7	7/19/2012	70	L	S	0.409	0.08	0.012	0.0364	0.3815	0	0	0	0.1846	0	1.2547	0.8105	0.5464	0.1783
8	7/19/2012	70	H	U	0.509	0.119	0.023	0.0377	1.0114	0	0	0.0743	0.2243	0	1.8507	0.5987	0.3784	0.2169
9	7/19/2012	70	L	U	0.585	0.131	0.023	0	0.6461	0	0	0.0316	0.1842	0.4958	10.8546	9.3317	1.2853	0.245
10	7/19/2012	70	H	E	0.495	0.099	0.015	0.0389	0.8297	0	0	0.033	0.1842	0.2579	4.0002	4.1701	0.6712	0.2464
11	7/19/2012	70	L	E	0.517	0.113	0.024	0.0751	1.3287	0	0.0724	0.0664	0.2038	0	0.9544	0.0652	0.3924	0.3184
12	7/19/2012	70	H	S	0.483	0.089	0.015	0.0482	0.6631	0	0	0.0322	0.1882	0	1.3454	1.1683	0.3848	0.2953
13	7/19/2012	70	L	E	0.72	0.158	0.027	0	0.2968	0	0	0	0.1923	0	6.4906	3.6023	0.5729	0.3505
14	7/19/2012	70	L	U	0.289	0.036	0.005	0.0739	1.7277	0	0.1382	0	0.201	0.286	0.1875	0	0.3378	0.1389
15	7/19/2012	70	H	U	0.426	0.058	0.011	0.0423	1.1534	0	0.0857	0	0.1961	0	0.0915	0	0.312	0.1692
16	7/19/2012	70	H	E	0.836	0.196	0.036	0.065	1.386	0	0.0959	0	0.2096	0	0.1964	0	0.3935	0.329
17	7/19/2012	70	H	S	0.397	0.052	0.007	0.0463	1.8401	0	0.0983	0	0.2003	0	0.1221	0	0.3001	0.2024
18	7/19/2012	70	L	S	0.533	0.125	0.023	0.0532	1.6087	0	0	0	0.2722	0.3131	0.1249	0	0.3479	0.2882
19	7/19/2012	70	H	U	0.619	0.144	0.029	0.0526	1.2935	0	0.0854	0	0.2119	0	0.4517	0.3518	0.4508	0.3453
20	7/19/2012	70	H	E	0.596	0.142	0.027	0.0435	1.0917	0	0.098	0	0.2105	0	2.064	1.3095	0.4339	0.3309
21	7/19/2012	70	H	S	0.471	0.102	0.018	0.0559	1.4193	0	0	0	0.194	0	0.125	0	0.3258	0.2652
22	7/19/2012	70	L	E	0.752	0.171	0.033	0.047	1.6656	0	0	0	0.2123	0	1.3258	0.842	0.4362	0.4
23	7/19/2012	70	L	S	0.776	0.157	0.025	0.0494	1.8736	0	0	0	0.208	0	0.1286	0	0.3759	0.3212
24	7/19/2012	70	L	U	0.677	0.141	0.024	0.0494	1.9565	0	0	0	0.207	0	0.1406	0	0.3708	0.3279

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	8/3/2012	20	H	S	21.869493	0.41065			0.41065	3.19235	119.7	3.603	3.532929	4.228916
2	8/3/2012	20	H	E	17.729763	0.0470032			0.0470032	2.721997	98.12	2.769	4.020868	3.945276
3	8/3/2012	20	H	U	10.633083	0			0	1.818	60.93	1.818	5.371154	3.272644
4	8/3/2012	20	L	U	24.944721	1.2334468			1.2334468	3.055553	101.3	4.289	4.142646	4.1965
5	8/3/2012	20	L	S	27.073725	1.8358516			1.8358516	3.341148	120.2	5.177	3.760948	4.52066
6	8/3/2012	20	L	E	11.756724	0			0	2.032	67.45	2.032	4.707778	3.175396
7	8/3/2012	20	L	S	14.772813	0			0	2.238	67.93	2.238	4.591003	3.118668
8	8/3/2012	20	H	U	16.310427	0			0	1.994	67.11	1.994	4.50219	3.02142
9	8/3/2012	20	L	U	17.670624	1.1783488			1.1783488	2.627651	93.69	3.806	3.75255	3.515764
10	8/3/2012	20	H	E	9.568581	0.2527024			0.2527024	1.871298	56.52	2.124	4.471118	2.527076
11	8/3/2012	20	L	E	14.536257	0.1021012			0.1021012	2.455899	84.9	2.558	4.083793	3.46714
12	8/3/2012	20	H	S	18.084597	0			0	2.163	80.74	2.163	4.223943	3.410412
13	8/3/2012	20	L	E	18.143736	0.4584016			0.4584016	2.589598	96.05	3.048	3.812219	3.661636
14	8/3/2012	20	L	U	12.998643	0.0323104			0.0323104	2.16269	73.96	2.195	4.150952	3.070044
15	8/3/2012	20	H	U	13.590033	0.4253428			0.4253428	2.095657	72.03	2.521	4.475941	3.22402
16	8/3/2012	20	H	E	26.364057	0.5061532			0.5061532	2.960847	110.9	3.467	3.988649	4.423412
17	8/3/2012	20	H	S	22.283466	0.1278136			0.1278136	3.114186	105.7	3.242	3.878195	4.099252
18	8/3/2012	20	L	S	12.702948	0			0	2.224	71.35	2.224	5.086503	3.62922
19	8/3/2012	20	H	U	20.095323	0			0	2.739	101.8	2.739	4.241709	4.31806
20	8/3/2012	20	H	E	14.772813	0.098428			0.098428	2.352572	73.64	2.451	4.521146	3.329372
21	8/3/2012	20	H	S	13.530894	0.0874084			0.0874084	1.872592	65.55	1.96	4.411527	2.891756
22	8/3/2012	20	L	E	20.036184	0.4694212			0.4694212	3.360579	114.7	3.83	3.785852	4.342372
23	8/3/2012	20	L	S	17.611485	2.2068448			2.2068448	2.449155	94.15	4.656	4.03548	3.799404
24	8/3/2012	20	L	U	19.740489	0.1131208			0.1131208	2.793879	101.7	2.907	3.887296	3.95338

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	8/3/2012	20	H	S	0.806	0.198	0.039											
2	8/3/2012	20	H	E	0.625	0.145	0.026											
3	8/3/2012	20	H	U	0.42	0.105	0.022											
4	8/3/2012	20	L	U	0.755	0.182	0.031											
5	8/3/2012	20	L	S	0.845	0.202	0.037											
6	8/3/2012	20	L	E	0.42	0.099	0.018											
7	8/3/2012	20	L	S	0.399	0.098	0.018											
8	8/3/2012	20	H	U	0.428	0.104	0.02											
9	8/3/2012	20	L	U	0.564	0.128	0.024											
10	8/3/2012	20	H	E	0.288	0.061	0.011											
11	8/3/2012	20	L	E	0.498	0.109	0.02											
12	8/3/2012	20	H	S	0.475	0.102	0.018											
13	8/3/2012	20	L	E	0.567	0.126	0.022											
14	8/3/2012	20	L	U	0.419	0.09	0.016											
15	8/3/2012	20	H	U	0.418	0.099	0.02											
16	8/3/2012	20	H	E	0.829	0.202	0.04											
17	8/3/2012	20	H	S	0.743	0.186	0.038											
18	8/3/2012	20	L	S	0.505	0.13	0.025											
19	8/3/2012	20	H	U	0.733	0.182	0.037											
20	8/3/2012	20	H	E	0.46	0.114	0.023											
21	8/3/2012	20	H	S	0.381	0.085	0.015											
22	8/3/2012	20	L	E	0.776	0.192	0.038											
23	8/3/2012	20	L	S	0.609	0.123	0.018											
24	8/3/2012	20	L	U	0.681	0.154	0.027											

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	8/20/2012	20	H	S	25.66788	0.516763	6.433552	5.7713	0.516763	2.893237	123	3.41	3.4052	4.188396
2	8/20/2012	20	H	E	21.613668	0.3009446	4.742044	4.2074	0.3009446	2.349055	101	2.65	3.681549	3.718364
3	8/20/2012	20	H	U	16.00377	0.151776	2.88944	1.28812	0.151776	1.588224	73	1.74	4.638493	3.3861
4	8/20/2012	20	L	U	18.926574	1.5831598	5.789168	4.31166	1.5831598	2.51684	94.6	4.1	4.033416	3.815612
5	8/20/2012	20	L	S	25.102176	1.881497	5.628072	4.31166	1.881497	2.988503	123	4.87	3.431555	4.220812
6	8/20/2012	20	L	E	16.852326	0.151776	4.580948	3.79036	0.151776	1.948224	83.8	2.1	4.031022	3.377996
7	8/20/2012	20	L	S	15.626634	0.1803402	3.856016	3.06054	0.1803402	2.18966	82.3	2.37	4.114338	3.3861
8	8/20/2012	20	H	U	17.65374	0.1708188	6.191908	5.56278	0.1708188	1.739181	80.1	1.91	3.994642	3.199708
9	8/20/2012	20	L	U	19.727988	0.8373168	4.339304	3.89462	0.8373168	2.392683	97.5	3.23	3.614224	3.523868
10	8/20/2012	20	H	E	17.040894	0.7167124	3.533824	3.26906	0.7167124	1.923288	81.1	2.64	3.875438	3.14298
11	8/20/2012	20	L	E	20.387976	0.8436644	5.789168	4.7287	0.8436644	2.076336	105	2.92	3.672507	3.856132
12	8/20/2012	20	H	S	17.512314	0.1486022	4.339304	3.99888	0.1486022	1.911398	79	2.06	4.050263	3.199708
13	8/20/2012	20	L	E	22.179372	0.596108	8.608348	10.463	0.596108	2.253892	111	2.85	3.415586	3.7913
14	8/20/2012	20	L	U	18.785148	0.1898616	8.366704	9.31614	0.1898616	1.980138	90.4	2.17	3.826367	3.459036
15	8/20/2012	20	H	U	14.3538	0.3072922	6.91684	8.16928	0.3072922	1.752708	69.4	2.06	4.260213	2.956588
16	8/20/2012	20	H	E	24.300762	0.4755036	10.219308	11.60986	0.4755036	2.604496	114	3.08	3.730902	4.253228
17	8/20/2012	20	H	S	19.53942	0.1295594	9.011088	10.15022	0.1295594	2.420441	93.6	2.55	3.764816	3.523868
18	8/20/2012	20	L	S	10.723866	0.1263856	6.5141	6.2926	0.1263856	1.463614	55.6	1.59	4.428496	2.462244
19	8/20/2012	20	H	U	21.330816	0.1422546	10.863692	11.92264	0.1422546	2.577745	111	2.72	3.729524	4.139772
20	8/20/2012	20	H	E	14.58951	0.167645	7.31958	6.18834	0.167645	1.862355	75.8	2.03	4.210559	3.191604
21	8/20/2012	20	H	S	16.899468	0.1454284	7.077936	8.16928	0.1454284	1.604572	71.9	1.75	4.247338	3.053836
22	8/20/2012	20	L	E	24.48933	0.818274	12.394104	13.38228	0.818274	2.631726	125	3.45	3.66191	4.577388
23	8/20/2012	20	L	S	22.792218	2.7638134	7.239032	7.96076	2.7638134	1.946187	112	4.71	3.732404	4.180292
24	8/20/2012	20	L	U	19.822272	0.2914232	7.480676	7.96076	0.2914232	1.808577	90.8	2.1	3.622084	3.288852
1	8/20/2012	40	H	S	25.243602	0.6468888	6.030812	6.08408	0.6468888	2.363111	117	3.01	3.309692	3.87234
2	8/20/2012	40	H	E	23.263638	0.5040678	4.580948	4.83296	0.5040678	2.115932	102	2.62	3.566004	3.637324
3	8/20/2012	40	H	U	15.108072	0.3866372	2.969988	1.91368	0.3866372	1.413363	79.7	1.8	4.380743	3.491452
4	8/20/2012	40	L	U	17.842308	1.960842	4.90314	4.93722	1.960842	2.019158	91.3	3.98	4.037183	3.685948
5	8/20/2012	40	L	S	30.38208	2.7035112	6.91684	6.39686	2.7035112	2.846489	164	5.55	2.855329	4.68274
6	8/20/2012	40	L	E	15.343782	0.3929848	4.258756	3.79036	0.3929848	1.657015	81.4	2.05	3.920889	3.191604
7	8/20/2012	40	L	S	16.758042	0.3644206	3.614372	3.37332	0.3644206	1.815579	78.8	2.18	4.204523	3.313164
8	8/20/2012	40	H	U	15.720918	0.40568	5.547524	5.56278	0.40568	1.83432	74.4	2.24	3.984801	2.964692
9	8/20/2012	40	L	U	20.293692	1.151523	4.5004	4.31166	1.151523	2.048477	99	3.2	3.649507	3.613012
10	8/20/2012	40	H	E	19.020858	0.9325308	3.614372	3.6861	0.9325308	1.587469	82	2.52	3.516649	2.883652
11	8/20/2012	40	L	E	22.462224	1.2753012	6.272456	5.56278	1.2753012	2.014699	121	3.29	3.387812	4.099252
12	8/20/2012	40	H	S	21.142248	0.4469394	4.419852	4.52018	0.4469394	1.363061	85.4	1.81	3.120426	2.664844
13	8/20/2012	40	L	E	19.209426	0.8087526	8.366704	9.10762	0.8087526	2.041247	111	2.85	3.29147	3.653532
14	8/20/2012	40	L	U	15.249498	0.4945464	8.12506	9.10762	0.4945464	1.755454	95.3	2.25	3.58711	3.418516
15	8/20/2012	40	H	U	15.485208	0.7643194	7.158484	7.43946	0.7643194	1.585681	79.3	2.35	3.902088	3.094356
16	8/20/2012	40	H	E	21.047964	0.8373168	9.252732	8.27354	0.8373168	2.302683	113	3.14	3.613313	4.083044
17	8/20/2012	40	H	S	17.88945	0.4596346	8.608348	9.00336	0.4596346	2.340365	93.7	2.8	3.380248	3.167292
18	8/20/2012	40	L	S	14.919504	0.5421534	7.480676	6.8139	0.5421534	1.497847	87.7	2.04	3.666951	3.215916
19	8/20/2012	40	H	U	16.852326	0.548501	10.460952	10.35874	0.548501	2.071499	107	2.62	3.702321	3.961484
20	8/20/2012	40	H	E	15.815202	0.6691054	7.400128	5.87556	0.6691054	1.690895	83.9	2.36	4.277354	3.5887
21	8/20/2012	40	H	S	16.852326	0.4755036	7.077936	7.64798	0.4755036	1.484496	78	1.96	4.133359	3.22402
22	8/20/2012	40	L	E	20.24655	1.1642182	11.266432	10.77578	1.1642182	2.095782	116	3.26	4.015886	4.658428
23	8/20/2012	40	L	S	19.209426	3.2970118	6.997388	7.02242	3.2970118	1.812988	120	5.11	3.078377	3.694052
24	8/20/2012	40	L	U	17.700882	0.707191	6.997388	7.96076	0.707191	1.352809	105	2.06	3.533581	3.71026
1	8/20/2012	70	H	S	23.7822	1.1927824	4.983688	5.25	1.1927824	3.358218	128.1	4.551	3.339219	4.27754
2	8/20/2012	70	H	E	22.273656	0.9071404	4.661496	4.83296	0.9071404	2.67786	116.8	3.585	3.655339	4.269436
3	8/20/2012	70	H	U	17.748024	0.1739926	2.567248	1.91368	0.1739926	1.920007	83.14	2.094	4.335949	3.604908
4	8/20/2012	70	L	U	16.758042	1.4562078	0.956288	1.28812	1.4562078	2.283792	89.08	3.74	3.200759	2.851236
5	8/20/2012	70	L	S	34.62486	2.246484	4.5004	4.2074	2.246484	2.991516	155.3	5.238	2.770027	4.301852
6	8/20/2012	70	L	E	16.333764	0.1486022	3.533824	3.06054	0.1486022	2.020398	77.43	2.169	4.15332	3.215916
7	8/20/2012	70	L	S	14.919504	0.1232118	2.969988	3.26906	0.1232118	2.132788	86.33	2.256	3.790854	3.272644
8	8/20/2012	70	H	U	16.00377	0.2215996	5.30588	6.08408	0.2215996	1.9634	78.07	2.185	4.202316	3.280748
9	8/20/2012	70	L	U	20.576544	1.1610444	3.936564	3.79036	1.1610444	2.499956	102.9	3.661	3.652949	3.758884
10	8/20/2012	70	H	E	16.286622	1.6688524	3.372728		1.6688524	2.256148	100	3.925	3.766988	3.766988
11	8/20/2012	70	L	E	23.7822	1.5514218	4.339304	3.6861	1.5514218	2.301578	128.1	3.853	3.26963	4.188396
12	8/20/2012	70	H	S	19.30371	0.2374686	4.017112	4.31166	0.2374686	2.081531	93.16	2.319	3.67821	3.42662
13	8/20/2012	70	L	E	22.085088	0.7516242	8.205608	9.52466	0.7516242	2.552376	109.4	3.304	3.354424	3.66974
14	8/20/2012	70	L	U	19.869414	1.0277448	4.90314	5.7713	1.0277448	1.937255	82.51	2.965	3.180613	2.624324
15	8/20/2012	70	H	U	16.569474	1.595855	4.822592	5.35426	1.595855	1.677145	89.03	3.273	3.329992	2.964692
16	8/20/2012	70	H	E	24.25362	0.4977202	9.494376	10.15022	0.4977202	2.75828	107.3	3.256	3.699523	3.969588
17	8/20/2012	70	H	S	17.88945	2.0909678	5.628072	6.18834	2.0909678	2.057032	101.9	4.148	3.179812	3.240228
18	8/20/2012	70	L	S	18.502296	0.373942	7.239032	6.60538	0.373942	1.857058	88.31	2.231	3.880217	3.42662
19	8/20/2012	70	H	U	20.057982	0.4120276	9.413828	9.52466	0.4120276	2.522972	103.6	2.935	3.909873	4.050628
20	8/20/2012	70	H	E	15.673776	0.6944958	7.480676	5.7713	0.6944958	2.319504	89.73	3.014	3.909127	3.50766
21	8/20/2012	70	H	S	18.455154	0.2342948	6.755744	7.54372	0.2342948	1.986705	78.69	2.221	4.117713	3.240228
22	8/20/2012	70	L	E	24.065052	1.0118758	10.622048	10.15022	1.0118758	2.940124	122.4	3.952	3.607278	4.415308
23	8/20/2012	70	L	S	24.866466	2.3036124	6.5141	6.60538	2.3036124	2.514388	111.4	4.818	3.55609	3.961484
24	8/20/2012	70	L	U	24.72504	0.4183752	6.272456	7.3352	0.4183752	1.963625	92.15	2.382	3.595403	3.313164

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	8/20/2012	20	H	S	0.748	0.183	0.035	0	1.2877	0	0	0	0.1927	0	8.2368	5.2314	0.8443	0.2359
2	8/20/2012	20	H	E	0.593	0.132	0.024	0	1.4068	0	0	0	0.1727	0	2.783	0.8235	0.5258	0.2241
3	8/20/2012	20	H	U	0.472	0.117	0.022	0.038	0.8173	0	0	0	0.1765	0	0.9802	0.2882	0.3614	0.2014
4	8/20/2012	20	L	U	0.649	0.16	0.033	0.0571	0.811	0	0	0	0.1902	0	0.7531	0	0.651	0.2741
5	8/20/2012	20	L	S	0.777	0.184	0.033	0.043	1.4304	0	0	0	0.1844	0	0.1382	0	0.5491	0.3436
6	8/20/2012	20	L	E	0.475	0.108	0.02	0.0228	0.7036	0	0	0	0.1769	0	2.8157	0.3856	0.4418	0.2669
7	8/20/2012	20	L	S	0.466	0.115	0.021	0.027	0.8515	0	0	0	0.1933	0	0.3026	0	0.3962	0.2239
8	8/20/2012	20	H	U	0.479	0.116	0.023	0.0216	0.7399	0	0	0	0.1776	0	4.2672	1.321	0.4531	0.2091
9	8/20/2012	20	L	U	0.597	0.132	0.024	0.0362	0.9884	0	0	0	0.1837	0	0.1089	0	0.443	0.2253
10	8/20/2012	20	H	E	0.425	0.092	0.016	0	1.1239	0	0	0	0.1862	0	5.6216	3.2914	0.6759	0.2037
11	8/20/2012	20	L	E	0.613	0.126	0.022	0.0552	0.945	0	0	0	0.1929	0	0.002	0	0.3466	0.3561
12	8/20/2012	20	H	S	0.416	0.089	0.016	0	1.0644	0	0	0	0.1559	0	2.0141	0.2047	0.6216	0.1982
13	8/20/2012	20	L	E	0.631	0.139	0.025	0	0.9499	0	0	0	0.1507	0	6.4462	4.57	0.6177	0.2521
14	8/20/2012	20	L	U	0.49	0.11	0.021	0.0402	0.7519	0	0	0	0.1741	0	0.1278	0	0.396	0.2002
15	8/20/2012	20	H	U	0.362	0.084	0.018	0.0299	0.7013	0	0	0	0.184	0	1.4128	0.8578	0.5361	0.2003
16	8/20/2012	20	H	E	0.752	0.177	0.035	0.0676	1.2451	0	0	0	0.1926	0	1.2211	0.0485	0.3425	0.3324
17	8/20/2012	20	H	S	0.569	0.139	0.029	0.0417	1.1562	0	0	0	0.187	0	0.786	0	0.4394	0.2477
18	8/20/2012	20	L	S	0.265	0.06	0.01	0.037	1.04	0	0	0	0.167	0	0.0494	0	0.4245	0.2906
19	8/20/2012	20	H	U	0.682	0.165	0.033	0.0376	1.1313	0	0	0	0.1788	0	0.7881	0.0528	0.2985	0.4186
20	8/20/2012	20	H	E	0.449	0.113	0.023	0.1112	1.3306	0	0	0	0.1745	0	0.1448	0	0.1904	0.3334
21	8/20/2012	20	H	S	0.388	0.087	0.016	0.0333	1.3292	0	0	0	0.1702	0	0.7629	0.0755	0.2237	0.2863
22	8/20/2012	20	L	E	0.839	0.2	0.039	0.0431	1.1146	0	0	0	0.1654	0	0.1599	0	0.5157	0.4741
23	8/20/2012	20	L	S	0.716	0.146	0.022	0.0334	1.5096	0	0	0	0.1719	0	0.0284	0	0.4189	0.4012
24	8/20/2012	20	L	U	0.491	0.099	0.016	0.0374	1.1438	0	0	0	0.1971	0	0	0	0.3451	0.3078
1	8/20/2012	40	H	S	0.668	0.16	0.032	0	1.0714	0	0	0	0.1386	0	10.0091	5.9699	0.8728	0.1957
2	8/20/2012	40	H	E	0.564	0.125	0.024	0	1.1398	0	0	0	0.1382	0	5.1092	1.5805	0.5259	0.2407
3	8/20/2012	40	H	U	0.515	0.126	0.023	0.0262	0.6496	0	0	0	0.1345	0	0.5787	0.1471	0.3317	0.2307
4	8/20/2012	40	L	U	0.563	0.126	0.02	0.068	0.7931	0	0	0	0.1555	0	0.8941	0	0.7449	0.2746
5	8/20/2012	40	L	S	0.977	0.208	0.036	0.0504	1.4864	0	0	0	0.1644	0	0.2196	0	0.5215	0.2861
6	8/20/2012	40	L	E	0.453	0.104	0.019	0	0.7082	0	0	0	0.143	0	2.5206	0.4008	0.438	0.2671
7	8/20/2012	40	L	S	0.422	0.101	0.019	0.0301	0.7554	0	0	0	0.1466	0	0.4736	0.0286	0.4008	0.2738
8	8/20/2012	40	H	U	0.439	0.108	0.022	0	0.9429	0	0	0	0.1554	0	5.6679	1.406	0.6814	0.2856
9	8/20/2012	40	L	U	0.613	0.136	0.025	0.0441	0.9486	0	0	0	0.1481	0	0.2117	0.0922	0.4071	0.2968
10	8/20/2012	40	H	E	0.4	0.086	0.015	0	0.6706	0	0	0	0.1429	0	7.2627	3.1578	0.7163	0.2676
11	8/20/2012	40	L	E	0.74	0.151	0.026	0.0348	0.8417	0	0	0	0.1663	0.1757	0.1655	0	0.4549	0.3459
12	8/20/2012	40	H	S	0.497	0.108	0.02	0	0.8119	0	0	0	0.1451	0.1538	2.3739	0.2943	0.1906	0.2898
13	8/20/2012	40	L	E	0.59	0.131	0.024	0	0.6259	0	0	0	0.1505	0.1334	5.8718	3.9865	0.5446	0.3249
14	8/20/2012	40	L	U	0.527	0.115	0.022	0.0308	0.6864	0	0	0	0.1431	0.1441	0.1901	0	0.3414	0.2695
15	8/20/2012	40	H	U	0.412	0.093	0.019	0.0378	0.8074	0	0	0	0.1421	0	1.1004	0.6284	0.4855	0.282
16	8/20/2012	40	H	E	0.71	0.166	0.033	0.0304	0.9883	0	0	0	0.1501	0.1705	1.4548	0	0.4478	0.3744
17	8/20/2012	40	H	S	0.521	0.121	0.025	0.0514	1.3555	0	0	0	0.1467	0	0.9183	0.0529	0.675	0.3583
18	8/20/2012	40	L	S	0.476	0.099	0.017	0.0378	1.0815	0	0	0	0.1418	0.1345	0.162	0	0.4138	0.3332
19	8/20/2012	40	H	U	0.67	0.16	0.034	0.0279	0.8882	0	0	0	0.1432	0.1343	0.7346	0.0911	0.4607	0.4148
20	8/20/2012	40	H	E	0.498	0.121	0.024	0.0396	0.9241	0	0	0	0.1441	0	0.1654	0	0.3851	0.3527
21	8/20/2012	40	H	S	0.427	0.094	0.018	0.0839	1.5628	0	0	0	0.1409	0	0.9955	0.1054	0.4032	0.3127
22	8/20/2012	40	L	E	0.758	0.176	0.037	0.0299	1.0809	0	0	0	0.1515	0.1607	0.2768	0	0.4929	0.4191
23	8/20/2012	40	L	S	0.756	0.15	0.023	0.0452	1.6125	0	0	0	0.1543	0	0.1379	0	0.3997	0.3548
24	8/20/2012	40	L	U	0.602	0.118	0.019	0.0482	1.4527	0	0	0	0.1457	0	0.0932	0	0.1476	0.3256
1	8/20/2012	70	H	S	0.832	0.193	0.034	0	1.3692	0	0	0	0.1842	0	4.2081	2.2129	0.9367	0.1784
2	8/20/2012	70	H	E	0.746	0.162	0.027	0.0444	1.4101	0	0	0	0.1832	0	2.5687	0.6962	0.4986	0.239
3	8/20/2012	70	H	U	0.542	0.125	0.022	0.0328	0.8332	0	0	0	0.1793	0	0.6587	0.1101	0.3368	0.1996
4	8/20/2012	70	L	U	0.38	0.057	0.006	0.0617	1.1026	0	0	0	0.1742	0	0.2545	0	0.4771	0.1616
5	8/20/2012	70	L	S	0.891	0.177	0.028	0.0398	1.8244	0	0	0	0.2073	0	0.1092	0	0.382	0.2646
6	8/20/2012	70	L	E	0.441	0.097	0.017	0	0.6549	0	0	0	0.1803	0	2.3913	0.3643	0.4277	0.25
7	8/20/2012	70	L	S	0.463	0.094	0.015	0.0416	0.979	0	0	0	0.1817	0	0.2383	0	0.3862	0.2266
8	8/20/2012	70	H	U	0.5	0.12	0.029	0.0254	1.0374	0	0.037	0	0.1999	0.1995	3.9423	0.9522	0.5242	0.265
9	8/20/2012	70	L	U	0.671	0.144	0.024	0.0634	1.1795	0	0	0	0.1801	0	0.1636	0	0.39	0.2354
10	8/20/2012	70	H	E	0.63	0.123	0.018	0	0.94	0	0	0	0.1787	0.1986	4.1279	2.0047	0.5657	0.2659
11	8/20/2012	70	L	E	0.771	0.137	0.019	0.0469	1.2588	0	0	0	0.1984	0.225	0.0922	0	0.4243	0.3322
12	8/20/2012	70	H	S	0.522	0.102	0.017	0.0318	1.0183	0	0	0	0.1926	0.179	0.9043	0.0739	0.3979	0.2969
13	8/20/2012	70	L	E	0.657	0.141	0.024	0	0.8314	0	0	0	0.1964	0	5.03	3.2289	0.5315	0.3137
14	8/20/2012	70	L	U	0.296	0.035	0.003	0.0433	1.1354	0	0	0	0.1947	0.1855	0.0919	0	0.3509	0.1895
15	8/20/2012	70	H	U	0.412	0.053	0.004	0.0383	1.0983	0	0	0	0.1798	0	0.1235	0	0.3369	0.242
16	8/20/2012	70	H	E	0.712	0.166	0.033	0.0503	1.1977	0	0	0	0.2048	0	1.5596	0.1176	0.5383	0.4298
17	8/20/2012	70	H	S	0.534	0.08	0.009	0.0585	2.0053	0	0	0	0.2032	0	0.1665	0	0.3689	0.3125
18	8/20/2012	70	L	S	0.509	0.103	0.017	0.0475	1.1328	0	0	0	0.1934	0	0.075	0	0.3451	0.3236
19	8/20/2012	70	H	U	0.642	0.147	0.029	0.0281	1.0975	0	0	0	0.1837	0	0.7828	0.1134	0.4304	0.3961
20	8/20/2012	70	H	E	0.562	0.13	0.024	0.0356	1.036	0	0	0	0.1828	0	0.0753	0	0.4317	0.3331
21	8/20/2012	70	H	S	0.426	0.089	0.015	0.0273	1.3188	0	0	0	0.182	0	1.0468	0.135	0.347	0.2954
22	8/20/2012	70	L	E	0.808	0.187	0.036	0.0363	1.2777	0	0	0	0.187	0	0.2097	0	0.4777	0.4103
23	8/20/2012	70	L	S	0.69	0.131	0.018	0	1.7676	0	0	0	0.1893	0	0.1244	0	0.3047	0.3328
24	8/20/2012	70	L	U	0.531	0.1	0.015	0.0327	1.3458	0	0	0	0.1827	0	0.0148	0	0.3645	0.3094

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	9/5/2012	20	H	S	25.02891	0.471525			0.471525	3.043475	122	3.515	3.685531	4.496348
2	9/5/2012	20	H	E	17.531544	0.1361884			0.1361884	2.479812	94.9	2.616	4.199996	3.985796
3	9/5/2012	20	H	U	16.006656	0.0957864			0.0957864	1.929214	78.37	2.025	5.023825	3.937172
4	9/5/2012	20	L	U	9.398808	2.9198862			2.9198862	1.389114	73.24	4.309	4.058979	2.972796
5	9/5/2012	20	L	S	7.365624	2.491625			2.491625	1.947375	93.59	4.439	4.02499	3.766988
6	9/5/2012	20	L	E	8.763438	0.2977964			0.2977964	1.905204	67.65	2.203	4.562087	3.086252
7	9/5/2012	20	L	S	12.575658	0.1604296			0.1604296	2.43657	80.58	2.597	4.554157	3.66974
8	9/5/2012	20	H	U	16.260804	0.1200276			0.1200276	2.093972	82.17	2.214	4.525209	3.718364
9	9/5/2012	20	L	U	13.147491	0.7785802			0.7785802	2.39242	84.04	3.171	3.836292	3.22402
10	9/5/2012	20	H	E	12.829806	0.330118			0.330118	2.078882	71.85	2.409	4.724014	3.394204
11	9/5/2012	20	L	E	16.197267	0.875545			0.875545	2.016455	101.2	2.892	4.242834	4.293748
12	9/5/2012	20	H	S	14.481768	0.1361884			0.1361884	2.113812	76.71	2.25	4.646575	3.564388
13	9/5/2012	20	L	E	7.937457	0.6371732			0.6371732	2.551827	104.7	3.189	3.876535	4.058732
14	9/5/2012	20	L	U	13.211028	0.208912			0.208912	2.285088	90.08	2.494	4.289782	3.864236
15	9/5/2012	20	H	U	15.49836	0.2210326			0.2210326	2.483967	85	2.705	4.38408	3.726468
16	9/5/2012	20	H	E	20.517783	0.5563692			0.5563692	2.862631	108.2	3.419	4.020773	4.350476
17	9/5/2012	20	H	S	17.023248	0.2573944			0.2573944	2.852606	90.02	3.11	3.941546	3.54818
18	9/5/2012	20	L	S	6.221958	1.0856354			1.0856354	1.512365	53.05	2.598	3.724795	1.976004
19	9/5/2012	20	H	U	19.691802	0.0917462			0.0917462	2.899254	113.8	2.991	3.986703	4.536868
20	9/5/2012	20	H	E	12.829806	0.1806306			0.1806306	2.145369	80.8	2.326	4.401342	3.556284
21	9/5/2012	20	H	S	16.7691	0.431123			0.431123	1.603877	75.35	2.035	4.633646	3.491452
22	9/5/2012	20	L	E	17.340933	3.0936148			3.0936148	2.235385	109.7	5.329	3.973181	4.35858
23	9/5/2012	20	L	S	19.056432	3.6107604			3.6107604	1.87924	107.2	5.49	3.650056	3.91286
24	9/5/2012	20	L	U	16.324341	0.2452738			0.2452738	1.816726	80.05	2.062	3.571942	2.85934

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	9/5/2012	20	H	S	0.825	0.215	0.045	0	1.5092	0	0	0	0.1563	0	1.7705	0.8034	0.5275	0.1761
2	9/5/2012	20	H	E	0.595	0.145	0.025	0.0374	1.0671	0	0	0	0.1605	0	0.1404	0	0.3962	0.183
3	9/5/2012	20	H	U	0.555	0.143	0.028	0.0483	1.7818	0	0	0	0.2145	0	0.3771	0	0.7033	0.1435
4	9/5/2012	20	L	U	0.374	0.082	0.012	0.0467	0.7418	0	0	0	1.0748	0	0.121	0	0.6893	0.1222
5	9/5/2012	20	L	S	0.482	0.1	0.013	0.0805	2.6869	0	0	0	0.5049	0	0.1168	0	0.4971	0.0849
6	9/5/2012	20	L	E	0.333	0.07	0.008	0.0332	0.5087	0	0	0	0.2006	0	0.0075	0	0.3518	0.1445
7	9/5/2012	20	L	S	0.455	0.113	0.019	0.0329	0.8889	0	0	0	0.2065	0	0.042	0	0.3937	0.1808
8	9/5/2012	20	H	U	0.58	0.154	0.03	0	1.844	0	0	0	0.2416	0	2.2125	0.4725	0.8536	0.2455
9	9/5/2012	20	L	U	0.48	0.113	0.02	0.0585	1.6724	0	0	0	0.2798	0	0.0782	0	0.4909	0.1792
10	9/5/2012	20	H	E	0.431	0.104	0.019	0.0642	1.2332	0	0	0	0.1846	0	0.1825	0	0.4055	0.1841
11	9/5/2012	20	L	E	0.637	0.134	0.02	0.0387	0.934	0	0	0	0.2811	0	0.0781	0	0.4189	0.1835
12	9/5/2012	20	H	S	0.47	0.117	0.024	0.0452	0.9661	0	0	0	0.1698	0	0.18	0	0.4489	0.2356
13	9/5/2012	20	L	E	0.588	0.137	0.023	0	0.7104	0	0	0	0.1881	0	0.7455	0.2295	0.3813	0.2373
14	9/5/2012	20	L	U	0.506	0.121	0.021	0.0326	0.6793	0	0	0	0.2185	0	0.0312	0	0.3956	0.1736
15	9/5/2012	20	H	U	0.474	0.12	0.024	0.0382	0.8559	0	0	0	0.165	0	0.1299	0	0.491	0.3185
16	9/5/2012	20	H	E	0.779	0.196	0.036	0.0413	1.195	0	0	0	0.1804	0	0.192	0	0.5927	0.327
17	9/5/2012	20	H	S	0.572	0.149	0.029	0.0513	1.5514	0	0	0	0.1907	0	0.0286	0	0.5686	0.2968
18	9/5/2012	20	L	S	0.213	0.041	0.006	0.0277	1.1526	0	0	0	0.4613	0	0.1726	0	0.4156	0.0994
19	9/5/2012	20	H	U	0.748	0.19	0.035	0.0438	1.1302	0	0	0	0.2003	0	0.2129	0	0.737	0.3724
20	9/5/2012	20	H	E	0.506	0.125	0.023	0.0404	1.1248	0	0	0	0.1809	0	0.0902	0	0.434	0.2463
21	9/5/2012	20	H	S	0.468	0.116	0.023	0.0434	1.8808	0	0	0	0.1859	0	0.2573	0	0.3759	0.2208
22	9/5/2012	20	L	E	0.686	0.16	0.026	0.0389	1.0498	0	0	0	0.3399	0	0	0	0.0616	0.0993
23	9/5/2012	20	L	S	0.664	0.133	0.016	0.0331	1.4339	0	0	0	0.7337	0	0	0	0.2524	0.097
24	9/5/2012	20	L	U	0.386	0.073	0.01	0.0333	0.9311	0	0	0	0.319	0	0	0	0.4034	0.1521

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	9/19/2012	20	H	S			5.57492	6.80616						
2	9/19/2012	20	H	E			4.60556	5.20872						
3	9/19/2012	20	H	U			3.71698	3.36552						
4	9/19/2012	20	L	U			2.50528	1.15368						
5	9/19/2012	20	L	S			3.2323	2.2596						
6	9/19/2012	20	L	E			3.31308	2.99688						
7	9/19/2012	20	L	S			3.95932	4.34856						
8	9/19/2012	20	H	U			6.14038	7.42056						
9	9/19/2012	20	L	U			3.2323	2.75112						
10	9/19/2012	20	H	E			4.36322	4.96296						
11	9/19/2012	20	L	E			3.79776	2.874						
12	9/19/2012	20	H	S			4.60556	5.20872						
13	9/19/2012	20	L	E			4.68634	5.70024						
14	9/19/2012	20	L	U			4.28244	4.96296						
15	9/19/2012	20	H	U			4.52478	5.45448						
16	9/19/2012	20	H	E			6.38272	8.4036						
17	9/19/2012	20	H	S			4.68634	6.06888						
18	9/19/2012	20	L	S			2.66684	1.15368						
19	9/19/2012	20	H	U			7.83676	9.38664						
20	9/19/2012	20	H	E			6.62506	7.05192						
21	9/19/2012	20	H	S			3.95932	5.08584						
22	9/19/2012	20	L	E			8.483	11.22984						
23	9/19/2012	20	L	S			3.87854	3.24264						
24	9/19/2012	20	L	U			2.90918	2.01384						
1	9/19/2012	40	H	S	22.623915	0.4653424	5.805212	6.24001	0.4653424	3.043658	108.7	3.509	3.704063	4.026316
2	9/19/2012	40	H	E	20.507946	0.3476416	4.995622	5.2375	0.3476416	2.649358	95.54	2.997	4.019179	3.839924
3	9/19/2012	40	H	U	18.856458	0.2755024	3.457401	2.89831	0.2755024	1.907498	80.3	2.183	4.469116	3.5887
4	9/19/2012	40	L	U	9.97971	1.5018688	2.323975	1.11607	1.5018688	1.150131	48.46	2.652	4.596013	2.227228
5	9/19/2012	40	L	S	25.875282	1.6195696	4.995622	4.56916	1.6195696	2.59543	124.7	4.215	3.300289	4.11546
6	9/19/2012	40	L	E	14.572911	0.2147536	2.809729	2.00719	0.2147536	1.755246	73.41	1.97	4.115815	3.02142
7	9/19/2012	40	L	S	18.288759	0.2944864	4.34795	4.23499	0.2944864	2.278514	89.53	2.573	4.098894	3.66974
8	9/19/2012	40	H	U	17.875887	0.2413312	6.371925	6.90835	0.2413312	1.994669	80.24	2.236	4.452258	3.572492
9	9/19/2012	40	L	U	15.811527	0.5374816	3.133565	2.45275	0.5374816	2.030518	78.63	2.568	3.687982	2.89986
10	9/19/2012	40	H	E	20.559555	0.4881232	4.34795	4.68055	0.4881232	2.443877	86.36	2.932	4.146128	3.580596
11	9/19/2012	40	L	E	12.250506	0.2982832	3.214524	1.78441	0.2982832	1.668717	80.11	1.967	3.366946	2.69726
12	9/19/2012	40	H	S	20.8176	0.3172672	4.995622	5.12611	0.3172672	1.857733	85.05	2.175	4.371974	3.718364
13	9/19/2012	40	L	E	21.952998	0.7501024	4.752745	4.56916	0.7501024	2.357898	108.3	3.108	3.770124	4.083044
14	9/19/2012	40	L	U	19.578984	0.453952	5.400417	4.90333	0.453952	2.166048	94.95	2.62	3.967339	3.766988
15	9/19/2012	40	H	U	20.353119	0.9209584	5.643294	5.34889	0.9209584	2.189042	92.78	3.11	4.191149	3.888548
16	9/19/2012	40	H	E	22.623915	1.15636	6.857679	6.68557	1.15636	2.77464	111.6	3.931	3.927323	4.382892
17	9/19/2012	40	H	S	21.488517	0.4691392	6.210007	6.12862	0.4691392	2.292861	100.4	2.762	3.70355	3.718364
18	9/19/2012	40	L	S	11.889243	1.2816544	2.72877	2.00719	1.2816544	1.466346	60.36	2.748	4.065838	2.45414
19	9/19/2012	40	H	U	22.107825	0.4615456	8.557818	7.4653	0.4615456	2.571454	109	3.033	3.872305	4.220812
20	9/19/2012	40	H	E	22.417479	0.700744	7.100556	4.90333	0.700744	2.774256	111.2	3.475	3.795694	4.220812
21	9/19/2012	40	H	S	19.26933	0.4425616	4.914663	4.79194	0.4425616	1.854438	82.79	2.297	4.227027	3.499556
22	9/19/2012	40	L	E	32.532843	1.5626176	9.367408	10.47283	1.5626176	2.691382	169	4.254	2.670151	4.512556
23	9/19/2012	40	L	S	17.308188	3.5179696	4.34795	2.67553	3.5179696	1.32403	89.36	4.842	4.12483	3.685948
24	9/19/2012	40	L	U	18.185541	0.453952	3.295483	3.12109	0.453952	1.500048	76.97	1.954	3.914923	3.013316
1	9/19/2012	70	H	S	22.159434	0.7652896	6.026011	5.48393	0.7652896	3.10571	119.2	3.871	3.799299	4.528764
2	9/19/2012	70	H	E	26.701026	1.498072	5.782054	5.59474	1.498072	2.712928	137.5	4.211	3.405629	4.68274
3	9/19/2012	70	H	U	22.469088	0.529888	3.66776	2.9353	0.529888	2.096112	108.3	2.626	4.032026	4.366684
4	9/19/2012	70	L	U	16.430835	1.4942752	1.553466	0.94072	1.4942752	2.637725	87.64	4.132	3.336572	2.924172
5	9/19/2012	70	L	S	25.46241	1.9688752	4.074355	3.48935	1.9688752	2.629125	132.6	4.598	3.366465	4.463932
6	9/19/2012	70	L	E	16.379226	0.6931504	3.911717	3.26773	0.6931504	1.90385	90.76	2.597	4.230855	3.839924
7	9/19/2012	70	L	S	19.372548	0.283096	4.562269	4.37583	0.283096	2.063904	98.16	2.347	4.077021	4.002004
8	9/19/2012	70	H	U	21.230472	0.5982304	5.538097	5.48393	0.5982304	2.20477	104.6	2.803	4.066184	4.253228
9	9/19/2012	70	L	U	21.178863	1.270264	4.887545	4.81907	1.270264	2.397736	114.5	3.668	3.80662	4.35858
10	9/19/2012	70	H	E	22.933569	1.7296768	4.643588	4.59745	1.7296768	2.357323	110.5	4.087	3.966418	4.382892
11	9/19/2012	70	L	E	19.682202	1.3006384	3.993036	3.93259	1.3006384	1.960362	112	3.261	3.710696	4.15598
12	9/19/2012	70	H	S	21.798171	0.415984	4.155674	10.02714	0.415984	1.875016	99.35	2.291	4.077129	4.050628
13	9/19/2012	70	L	E	21.33369	0.9893008	4.399631	7.81094	0.9893008	2.401699	113.3	3.391	3.868395	4.382892
14	9/19/2012	70	L	U	15.037392	1.1525632	2.04138	5.26231	1.1525632	2.124437	80.99	3.277	3.420417	2.770196
15	9/19/2012	70	H	U	16.998534	1.7562544	1.960061	3.60016	1.7562544	1.682746	86.83	3.439	3.899689	3.3861
16	9/19/2012	70	H	E	22.004607	0.9361456	6.513925	10.80281	0.9361456	2.705854	109.2	3.642	3.954267	4.31806
17	9/19/2012	70	H	S	11.682807	2.7054544	2.85457	5.92717	2.8460544					2.997108
18	9/19/2012	70	L	S	18.030714	1.0728304	3.179846	6.2596	1.0728304	1.66317	73.37	2.736	4.107014	3.013316
19	9/19/2012	70	H	U	15.243828	0.662776	7.083158	11.13524	0.662776	2.402224	107.6	3.065	3.990472	4.293748
20	9/19/2012	70	H	E	20.765991	1.1601568	7.245796	10.692	1.1601568	2.985843	131.1	4.146	3.646063	4.779988
21	9/19/2012	70	H	S	19.527375	0.5336848	4.399631	8.36499	0.7598848	1.843115	90.73	2.603	4.267982	3.87234
22	9/19/2012	70	L	E	25.204365	1.5853984	8.221624	12.02172	1.5853984	3.155602	161.7	4.741	2.810743	4.544972
23	9/19/2012	70	L	S	16.017963	2.8307488	3.423803	6.48122	2.8307488	1.577251	93.53	4.408	3.94959	3.694052
24	9/19/2012	70	L	U	18.908067	0.68176	3.261165	6.81365	0.68176	1.77624	88.42	2.458	3.73791	3.30506

1	2	3	4	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	9/19/2012	20	H	S				0.0442	1.3109	0	0	0	0.1931	0	0.8103	0.117	0.4281	0.2838
2	9/19/2012	20	H	E				0.0446	1.262	0	0	0	0.2127	0	0.0378	0	0.3018	0.2701
3	9/19/2012	20	H	U				0	0.9145	0	0	0	0.1979	0	3.7887	1.1165	0.4845	0.2387
4	9/19/2012	20	L	U				0	1.0485	0	0	0	1.0699	0	0	0	0.1186	0.2391
5	9/19/2012	20	L	S				0	1.7699	0	0	0	1.195	0	0.023	0	0.025	0.1964
6	9/19/2012	20	L	E				0.0371	1.1738	0	0	0	0.3068	0	0.0085	0	0.1028	0.3115
7	9/19/2012	20	L	S				0	0.7542	0	0	0	0.3224	0	0	0	0.0768	0.3314
8	9/19/2012	20	H	U				0	0.8171	0	0	0	0.2137	0	1.6514	0.3838	0.3861	0.3488
9	9/19/2012	20	L	U				0.0396	1.4269	0	0	0	0.4141	0	0	0	0.0301	0.2425
10	9/19/2012	20	H	E				0.0411	0.9554	0	0	0	0.2119	0	0.8318	0.2546	0.3982	0.3362
11	9/19/2012	20	L	E				0	3.4297	0	0	0	0.4534	0	0.0304	0	0.0289	0.2523
12	9/19/2012	20	H	S				0	1.2672	0	0	0	0.208	0	0.2843	0.0257	0.32	0.3362
13	9/19/2012	20	L	E				0	0.6336	0	0	0	0.2078	0	0.8389	0.323	0.249	0.3573
14	9/19/2012	20	L	U				0	1.0471	0	0	0	0.213	0	0	0	0.0382	0.3003
15	9/19/2012	20	H	U				0.0414	1.0985	0	0	0	0.205	0	0.4311	0.0625	0.4021	0.2014
16	9/19/2012	20	H	E				0.0465	1.5434	0	0	0	0.2	0	0.2296	0	0.424	0.3647
17	9/19/2012	20	H	S				0.0381	1.1183	0	0	0	0.2003	0	0.0008	0	0.1099	0.3986
18	9/19/2012	20	L	S				0	0.3961	0	0	0	1.005	0	0	0	0	0.2205
19	9/19/2012	20	H	U				0.0393	0.9099	0	0	0	0.204	0	0.0764	0	0.1247	0.2496
20	9/19/2012	20	H	E				0.0411	1.2396	0	0	0	0.1964	0	0	0	0.3479	0.3248
21	9/19/2012	20	H	S				0.0383	1.4503	0	0	0	0.1982	0	0.0393	0	0.4028	0.3533
22	9/19/2012	20	L	E				0.0409	1.4998	0	0	0	0.297	0	0.1382	0.0102	0.2376	0.379
23	9/19/2012	20	L	S				0	3.0606	0	0	0	1.3108	0	0	0	0.0278	0.2966
24	9/19/2012	20	L	U				0.0469	0.9118	0	0	0	0.4755	0	0	0	0.024	0.3525
1	9/19/2012	40	H	S	0.72	0.188	0.031	0.0809	2.8083	0	0	0	0.1783	0	0.4973	0	0.4478	0.2473
2	9/19/2012	40	H	E	0.604	0.149	0.024	0.0749	1.485	0	0	0	0.1896	0	0.0662	0	0.4657	0.2397
3	9/19/2012	40	H	U	0.557	0.14	0.022	0	0.6007	0	0	0	0.1815	0	0.896	0.1732	0.3634	0.1241
4	9/19/2012	40	L	U	0.263	0.054	0.007	0.0109	0.712	0	0	0	0.848	0	0	0	0.148	0.1901
5	9/19/2012	40	L	S	0.741	0.159	0.022	0.0103	1.6216	0	0	0	0.5152	0	0	0	0.0481	0.144
6	9/19/2012	40	L	E	0.394	0.084	0.01	0.0119	0.9651	0	0	0	0.2346	0	0	0	0.0523	0.2283
7	9/19/2012	40	L	S	0.579	0.133	0.02	0.0087	0.694	0	0	0	0.28	0	0	0	0.052	0.3321
8	9/19/2012	40	H	U	0.563	0.152	0.029	0	0.7086	0	0	0	0.1905	0	2.1701	0.3755	0.4503	0.3024
9	9/19/2012	40	L	U	0.423	0.091	0.011	0.019	0.7035	0	0	0	0.3801	0	0	0	0.042	0.1759
10	9/19/2012	40	H	E	0.537	0.135	0.025	0.0501	0.922	0	0	0	0.1839	0	0.6172	0.1002	0.383	0.2942
11	9/19/2012	40	L	E	0.34	0.066	0.007	0.0279	2.4303	0	0	0	0.4695	0	0	0	0.0485	0.2203
12	9/19/2012	40	H	S	0.534	0.131	0.023	0.0333	0.8593	0	0	0	0.2021	0	0.1029	0	0.3385	0.3204
13	9/19/2012	40	L	E	0.679	0.158	0.022	0.0262	0.5265	0	0	0	0.1992	0	0.2593	0.0348	0.3432	0.3299
14	9/19/2012	40	L	U	0.577	0.133	0.019	0.0222	0.7474	0	0	0	0.1888	0	0	0	0.3392	0.298
15	9/19/2012	40	H	U	0.598	0.143	0.025	0.0172	0.7846	0	0	0	0.1808	0	0	0	0.2715	0.2949
16	9/19/2012	40	H	E	0.791	0.199	0.035	0.0329	1.247	0	0	0	0.1944	0	0.069	0	0.4555	0.4123
17	9/19/2012	40	H	S	0.643	0.157	0.026	0.024	2.3997	0	0	0	0.1921	0	0.0877	0	0.3173	0.2001
18	9/19/2012	40	L	S	0.315	0.064	0.007	0.0286	0.4609	0	0	0	0.7176	0	0	0	0	0.1931
19	9/19/2012	40	H	U	0.743	0.187	0.031	0.0199	1.2308	0	0	0	0.191	0	0.0915	0	0.569	0.4495
20	9/19/2012	40	H	E	0.759	0.187	0.028	0.0223	1.0846	0	0	0	0.1904	0	0	0	0.5241	0.4031
21	9/19/2012	40	H	S	0.525	0.126	0.022	0.0138	1.3557	0	0	0	0.1853	0	0	0	0.0457	0.224
22	9/19/2012	40	L	E	0.896	0.21	0.047	0.0304	1.4607	0	0	0	0.488	0	0.9817	0.1305	0.7757	0.5109
23	9/19/2012	40	L	S	0.573	0.119	0.013	0.0452	1.8305	0	0	0	1.2139	0	0	0	0.0391	0.2802
24	9/19/2012	40	L	U	0.436	0.088	0.01	0	1.0482	0	0	0	0.3773	0	0	0	0.1743	0.247
1	9/19/2012	70	H	S	0.808	0.209	0.04	0.08	1.8224	0	0	0	0.178	0	0.2946	0	0.5143	0.2511
2	9/19/2012	70	H	E	0.948	0.222	0.034	0	1.6808	0	0	0	0.1608	0	0.0932	0	0.5071	0.3159
3	9/19/2012	70	H	U	0.7	0.154	0.022	0.0683	1.1666	0	0	0	0.1648	0	0.077	0	0.3611	0.2206
4	9/19/2012	70	L	U	0.35	0.057	0.008	0.0232	1.8721	0	0	0	0.3809	0	1.1709	0.0335	0.646	0.1441
5	9/19/2012	70	L	S	0.742	0.151	0.021	0	0	0	0	0	0.1527	0	0	0	0	0.1024
6	9/19/2012	70	L	E	0.538	0.115	0.016	0.0245	0.8443	0	0	0	0.181	0	0	0	0.332	0.196
7	9/19/2012	70	L	S	0.558	0.124	0.02	0.0313	1.2234	0	0	0	0.1717	0	0.0109	0	0.3728	0.2375
8	9/19/2012	70	H	U	0.734	0.178	0.03	0.0346	1.256	0	0	0	0.1723	0	0.2042	0	0.3918	0.2803
9	9/19/2012	70	L	U	0.8	0.181	0.027	0.0196	1.2372	0	0	0	0.1782	0	0	0	0.2705	0.1357
10	9/19/2012	70	H	E	0.752	0.169	0.026	0.0353	1.3046	0	0	0	0.1739	0	0.0665	0	0.3766	0.2794
11	9/19/2012	70	L	E	0.674	0.133	0.018	0	1.4833	0	0	0	0.1876	0	0	0	0.3566	0.1927
12	9/19/2012	70	H	S	0.597	0.132	0.023	0.0218	1.2307	0	0	0	0.1683	0	0	0	0.3228	0.2582
13	9/19/2012	70	L	E	0.71	0.157	0.022	0.0158	1.0019	0	0	0	0.2023	0	0.4929	0.0026	0.3063	0.3111
14	9/19/2012	70	L	U	0.297	0.045	0.008	0	1.2412	0	0	0	0.178	0	0	0	0.1909	0.1515
15	9/19/2012	70	H	U	0.426	0.061	0.007	0.0399	1.2151	0	0	0	0.1554	0	0	0	0.3132	0.1625
16	9/19/2012	70	H	E	0.772	0.193	0.034	0.0475	1.4346	0	0	0	0.1952	0	0	0	0.4548	0.3651
17	9/19/2012	70	H	S	0.416	0.067	0.011	0	1.872	0.1406	0	0	0.1956	0	0	0	0	0.2269
18	9/19/2012	70	L	S	0.401	0.08	0.009	0.0137	0.6965	0	0	0	0.5172	0	0	0	0	0.1665
19	9/19/2012	70	H	U	0.696	0.168	0.028	0	1.1089	0	0	0	0.1717	0	0	0	0.1964	0.3654
20	9/19/2012	70	H	E	0.907	0.214	0.033	0.0221	1.2974	0	0	0	0.1926	0	0.0001	0	0.3991	0.3773
21	9/19/2012	70	H	S	0.548	0.13	0.025	0	2.8855	0.2262	0	0	0.1861	0	0.0473	0	0.3587	0.2252
22	9/19/2012	70	L	E	0.84	0.199	0.039	0.0683	1.6182	0	0	0	0.4329	0	0.9952	0.0497	0.7479	0.5027
23	9/19/2012	70	L	S	0.564	0.108	0.013	0.0199	2.2235	0	0	0	0.631	0	0	0	0.0281	0.2418
24	9/19/2012	70	L	U	0.488	0.097	0.013	0.0284	1.3514	0	0	0	0.2444	0	0	0	0.2886	0.2726

Appendix B

Table 5: Key to Table 4: Raw Data Files

1	**Bin**	Bin number, there were 24 bins
2	**Date**	Date of sampling
3	**Depth**	Depth of sample, there were three depths: 20 cm, 40 cm, 70 cm
4	**WT**	Water table. There were two water table heights: high (H) and low (L)
5	**Veg**	Vegetation. There were three community types: Ericaceae-only (E), sedge-only (S), and control (U)
6	**Tannins**	Total phenolics, tannins and lignins. Mg/L
7	**ammonium**	Ammonium. Mg/L
8	**Total Iron**	Total iron. Mg/L
9	**Ferrous Iron**	Ferrous iron. Mg/L
10	**DIN**	dissolved inorganic nitrogen. This was the sum of ammonium, nitrate, and nitrite. Mg/L
11	**DON**	dissolved organic nitrogen. This was determined as the difference between total dissolved nitrogen (TDN) and DIN. Mg/L
12	**DOC**	dissolved organic carbon. Mg/L
13	**TDN**	total dissolved nitrogen. Mg/L
14	**SUVA254**	Specific ultraviolet absorbance, normalized for DOC. 254 nm
15	**UVA254**	ultraviolet absorbance at 254 nm
16	**UVA365**	ultraviolet absorbance at 365 nm
17	**UVA465**	ultraviolet absorbance at 365 nm
18	**UVA665**	ultraviolet absorbance at 665 nm
19	**flouride**	ppm
20	**chloride**	ppm
21	**nitrite**	ppm
22	**bromide**	ppm
23	**nitrate**	ppm
24	**sulfate**	ppm
25	**phosphate**	ppm
26	**acetate**	ppm
27	**propionate**	ppm
28	**formate**	ppm
29	**oxalate**	ppm